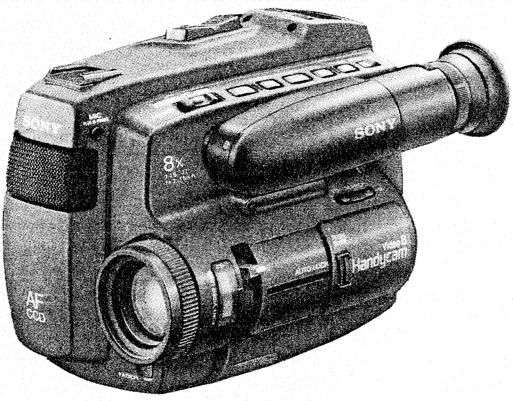
CCD-TR6/TR50

SERVICE MANUAL

US Model
Canadian Model
CCD-TR6
E Model
CCD-TR50



Handycam

U MECHANISM

For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL Ⅲ" (9-972-732-11).

SPECIFICATIONS

System

Video recording system	Rotary two heads, Helical scanning FM system
Audio recording system	Rotary head, FM system
Video signal	NTSC color, EIA standards
Usable cassette	8 mm video format cassette
Tape speed	SP mode: Approx. 1.43 cm (1/16 inch) /sec LP mode: Approx. 0.72 cm (1/32 inch) /sec (playback only)
Recording time	SP mode: 2 hours (P6-120)
Playback time	SP mode: 2 hours (P6-120) LP mode: 4 hours (P6-120)
Fast forward/rewind time	Approx. 6.5 minutes (P6-120)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (black and white)
Lens	Combined 8 × power zoom lens f = 7 – 56 mm (9/32 to 2 3/4 inches), F 1.6 with macro filter diameter: 37 mm (1 1/2 inches)
Auto focus system	TTL
Color temperature	Automatic, HOLD, ☼ (indoor) 3200K, ☀ (outdoor) 5,800K
Minimum illumination	4 lux (F 1.6)
Illumination range	4 lux – 100,000 lux (0.4 – 9,290 footcandles)
Recommended illumination	More than 150 lux (14 footcandles)

Input and output connector

Video input/output	Selectable with IN/OUT selector Phono jack (1), 1 Vp-p, 75 ohms unbalanced sync negative
Audio input/output	Selectable with IN/OUT selector Phono jack (1) Input: –7.5 dBs, input impedance more than 47 kilohms Output: –7.5 dBs, (at output impedance 47 kilohms) impedance less than 2.2 kilohms
RFU DC OUT	Special minijack (1), DC 5V
Eearphone jack	Minijack (1) impedance 8 ohms
Remote jack	Stereo mini-minijack (1)
MIC jack	Minijack (1), –66 dBs, low inpedance with 2.5 – 3 V DC output, impedance 6.8 kilohms

— Continued on next page —

MICROFILM

8 VIDEO CAMERA RECORDER

SONY®

General

Power requirements	On battery mounting surface 6.0 V (battery pack) 7.5 V (AC power adaptor) 9.0 V (alkaline batteries)
Power consumption	5.4 W (camera recording) including the viewfinder
Installation	Vertically, Horizontally
Operating temperature	0°C to 40°C (32° F to 104° F)
Storage temperature	−20°C to +60°C (−4° F to +140° F)
Dimensions	Approx. 127 × 122 × 185 mm (w/h/d) (5 × 4 7/8 × 7 3/8)
Weight	Approx. 950 g (2 lb 2 oz) excluding the battery and cassette
Microphone	Electret condenser microphone, monaural type

Design and specifications are subject to change without notice.

Supplied Accessories

The camcorder is packed together with the following units. Check to see that everything is contained in the package.
(*Attached to the camcorder)

- Battery pack NP-55 (1)
- AC power adaptor AC-V35 (1)
- Lithium battery CR2025 (1)
- **RFU adaptor RFU-90UC (1) (CCD-TR6)**
- **RFU adaptor RFU-89NA (1) (CCD-TR50)**
- **Antenna selector (1) (CCD-TR50)**
- **Set-up-ring ϕ37mm to ϕ46mm (ϕ1 1/2 to ϕ1 13/16 inches) (1)**
- **Shoulder strap (1)**
- **Lens cap (1) ***
- **Jack cover (1) ***

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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Adjustments are found on page 231 and after.

SERVICE NOTE

[HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [⊗] mark is flashing in the viewfinder at this time, head clogs are occurred.

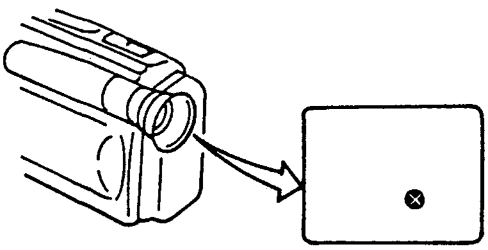
Check During Playback of a Tape

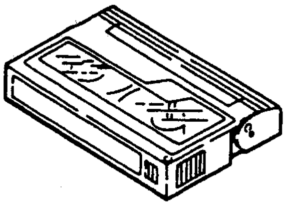
① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

Remedy

[Cleaning method using a cleaning tape]

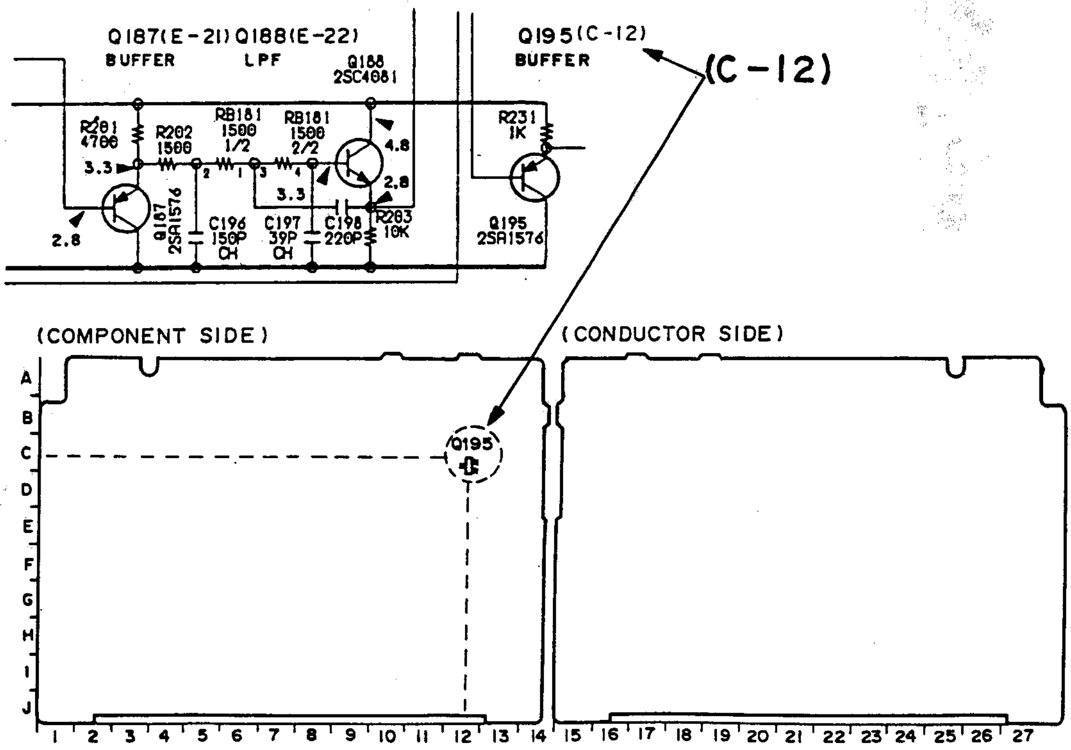
- Use the Cleaning Tape V8-6CLH. (Please follow the instructions attached to the cleaning tape.)





[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red sa shown below. This enables to find the location on the board easily when servicing.


Q187(E-21) Q188(E-22)
BUFFER
LPF
Q188
2SC4081
Q195(C-12)
BUFFER
(C-12)
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
4.8
3.3
2.8
3.3
2.8
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
R231
1K
Q195
2SA1576
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
A
B
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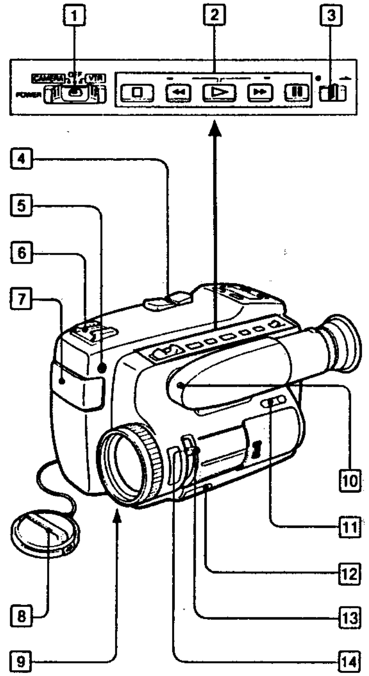
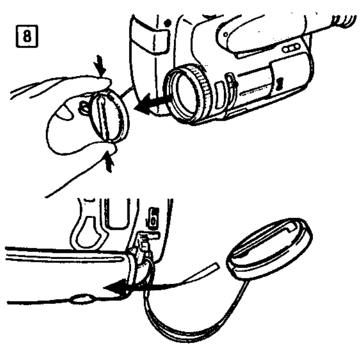
SECTION 1
GENERAL

Identifying the Parts

(A-1)





For details on the use of each control, refer to the pages indicated in the circle.

(A-1)

1 **POWER switch**
CAMERA: For camera recording
VTR: For playing back or editing tapes
OFF: Power off

2 **Tape transport buttons**
▷ (playback)
▶▶ FF (fast forward)
◀◀ REW (rewind)
□ (stop)
⁚⁚ (pause)

3 **● REC (recording) switch ●**
Slide in the direction of the arrow for recording.

4 **Power zoom button ●**

5 **MIC jack (PLUG IN POWER)**
Connect an external microphone. The MIC jack accepts a Sony "Plug-in-power" microphone and supplies power to it.

6 **Accessory shoe**
Attach a video light, etc.

7 **Built-in microphone**

8 **Lens cap**
To remove the lens cap, squeeze the sides as shown.
Hook it on the grip strap.

9 **FADER button ●**

10 **Camera recording/battery lamp**
Lights during camera recording. It blinks when the battery is exhausted.

11 **EDITSEARCH ⊜ button ●, ●, ●**

12 **Lithium battery compartment ●**

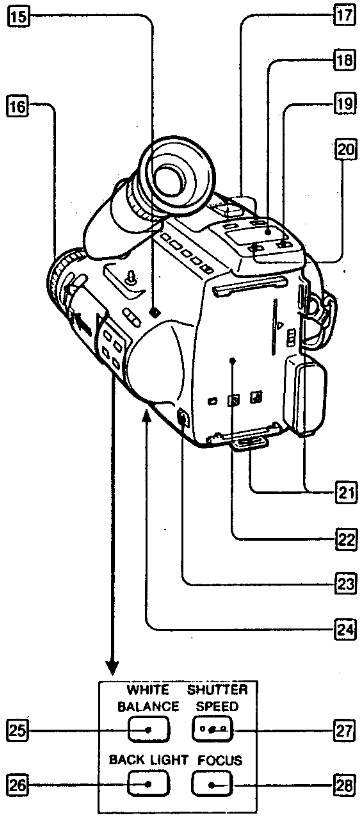
13 **Macro set button ●**

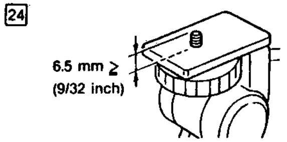
14 **Zoom lever ●, ●**

This section is extracted from instruction manual.

Identifying the Parts

(A-2)





(A-2)

15 **EDIT switch ●**
Normally set to the left position. When editing tapes, set to EDIT.

16 **Focus ring ●**

17 **DATE and TIME buttons ●**
Press to display or turn off the date or time.

18 **Display window**

19 **ZERO MEM (zero memory) button ●**
Use to memorize the counter zero point.

20 **RESET button ●**
Press to reset the counter to zero.

21 **Hooks for shoulder strap**
Attach the shoulder strap.

22 **Battery mounting surface**

23 **BATT (Battery eject) knob ●**

24 **Tripod receptacle**
Note when attaching a tripod not manufactured by Sony, the length of the camera mounting screw must be less than 6.5mm. Otherwise the screw may damage the inner parts of the camera.

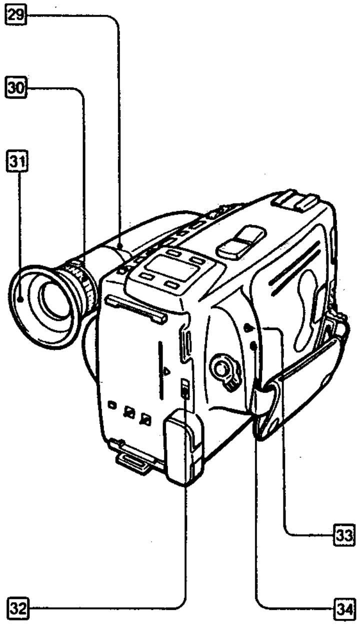
25 **WHITE BALANCE button ●**

26 **BACK LIGHT button ●**

27 **SHUTTER SPEED button ●**
Used to select the shutter speed.

28 **FOCUS button ●**
Used for manual focusing.

(A-3)



(A-3)

29 **Viewfinder**
The picture being recorded or played back can be monitored in monochrome here. Also marks such as the caution indicators and function modes appear in here.

30 **Viewfinder lens adjustment ring ●**
Adjust to your eyesight to assure good focus. Be sure to adjust this ring when shooting for the first time.

31 **Eyecup**

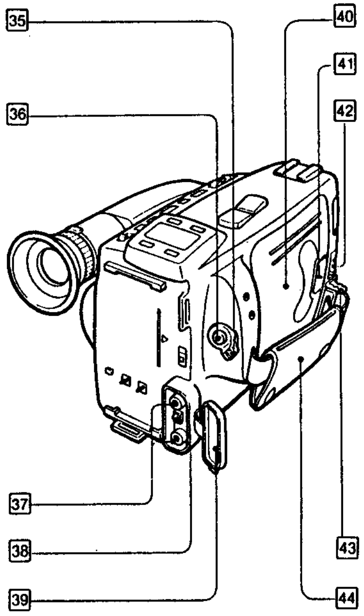
32 **IN/OUT (video/audio input/output) selector switch ●**
For input: Slide to IN
For output: Slide to OUT

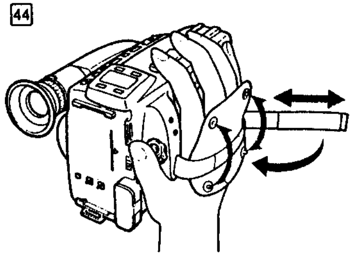
33 **Ⓛ REMOTE control jack (stereo mini-minijack)**
Connect a wired remote control unit, an editing controller, or other equipment here.

34 **⊛ (earphone) Jack (mini-jack)**

About Ⓛ (LANC)
Ⓛ stands for Local Application Control Bus System. The Ⓛ connector is used for controlling the tape transport of video equipment and the peripherals connected to it. This connector has the same function as the connectors indicated as CONTROL L or REMOTE.

(A-4)





(A-4)

35 **STANDBY switch**
Turn to STANDBY to set the camcorder to the standby mode.

36 **START/STOP button**
Press to start and stop camera recording.

37 **VIDEO/AUDIO jacks (phono jacks)**

38 **RFU DC OUT (RFU adaptor DC output) jack (special minijack)**
Attach the supplied RFU adaptor here, if necessary.

39 **Jack cover**
Even if the cover is detached, it can be attached again.

40 **Cassette holder**

41 **PUSH CLOSE button ●**
Push to close the cassette holder.

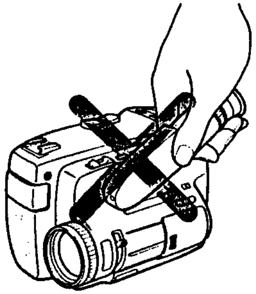
42 **EJECT (cassette eject) button.**

43 **Strap release knob**

44 **Grip strap**
Adjust the length so that your thumb can easily manipulate the START/STOP button.

Caution (A-5)
Do not pick up the unit as shown in the illustration.

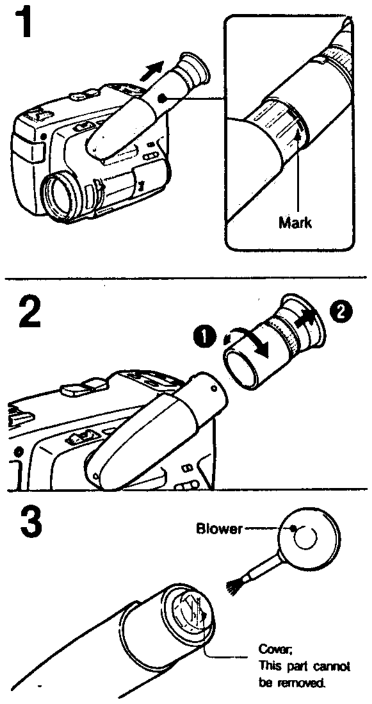
(A-5)



To remove dust from inside the viewfinder (A-6)

1. **Pull out until the mark appears.**
2. **Turn as illustrated until it stops and pull out.**
3. **Clean the surface of the cover with a blower.**

(A-6)


1
Mark
2
❶
❷
3
Blower
Cover;
This part cannot be removed.

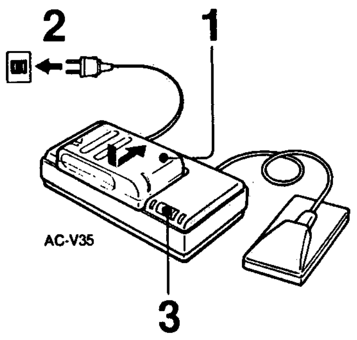
Connecting the Power Sources

First, Choose the Power Source.

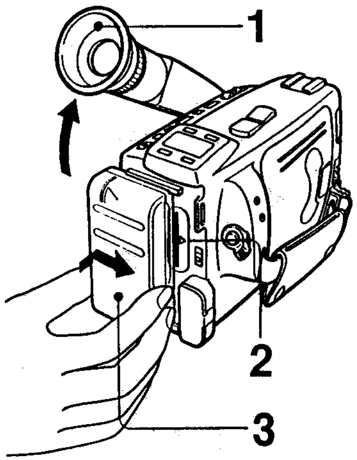
Place	Power source	Accessory to be used
Outdoors	Battery pack	Battery pack NP-55 (supplied), NP-66H, NP-77, NP-77H
	Alkaline batteries	Battery case EBP-55
Indoors	House current	AC power adaptor AC-V35 (supplied), AC-V55
In the car	12V or 24V car battery	DC pack DCP-77, DCP-55 (DCC-16B car battery cord supplied)

Note on power source
- Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted tape. If disconnected accidently supply the power again immediately.

(B-1)



(B-2)



Using the Battery Pack

Step 1

Charge the battery pack. (B-1)

1 **Align the right side of the battery pack with the line on the AC power adaptor and slide in the battery pack to the right.**

2 **Connect the AC power adaptor to a wall outlet.**

3 **Set CHARGE/VTR to CHARGE.**
Charging begins.

Required charging time

NP-55 (supplied)	NP-66H	NP-77	NP-77H
60	100	120	140

Approximate minutes when using AC-V35.

See the instruction manual of the AC power adaptor for details.

Step 2

Mount the battery pack on the camcorder. (B-2)

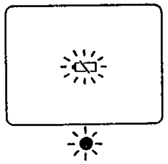
1 **Lift up the viewfinder.**

2 **Align the right side of the battery pack with the line on the camcorder.**

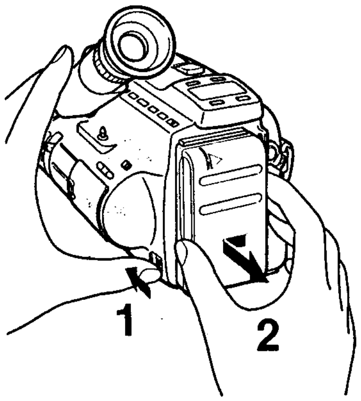
3 **Slide the battery pack to the right.**

Note
Make sure the battery fits completely on the mounting surface of the camcorder. Imperfect fit may damage the projections on the camcorder.

(B-3)



(B-4)



Battery life
A fully charged battery pack lasts for:

NP-55 (supplied)	NP-66H	NP-77	NP-77H
60	100	120	140

(Approximate minutes continuous recording when used indoors)

When the battery becomes weak (B-3)

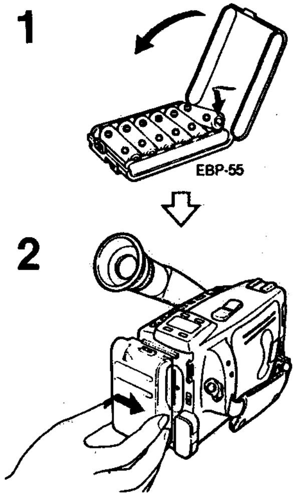
The 🪫 indication and red lamp blink slowly in the viewfinder. Replace the battery pack with a fully charged one, when they blink rapidly.

To remove the battery pack (B-4)

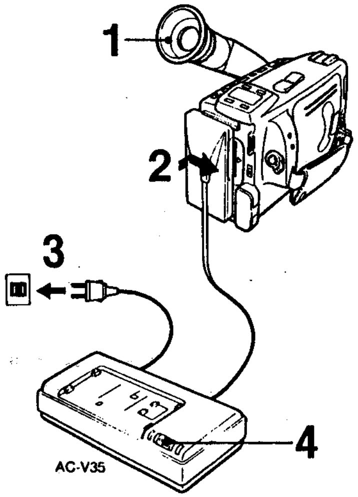
While pressing the BATT knob in the direction of arrow, slide to the left and pull out the battery pack as illustrated.

Other options for charging
- AC-V55 AC power adaptor: You can charge two battery packs one after another.
- BC-55, BC-77 portable battery charger: You can charge a battery pack on 100 – 240 V AC.
- DC-V30 car battery charger: You can charge a battery by connecting the car battery carger to the cigarette lighter socket. This battery charger can also supply power for Sony 8 mm video equipment that operates on a battery pack.
- NP-4000 rechargeable battery pack: You can use it for long outdoor recording. The DCP-55 DC pack is required for the connection (not supplied).

(B-5)



(B-6)



(B-5)

The EBP-55 battery case is required (not supplied.)

1 **Insert 6 AA size alkaline batteries into the battery case.**

2 **Attach the case in the same way as the battery pack.**

Battery life
Approx. 60 minutes using Sony alkaline batteries (continuous recording when operated indoors)

Notes on battery life
- Batteries will not last as long in cold places.
- No indication appears in the viewfinder when the batteries are weak.

Using House Current

(B-6)

Use the supplied AC-V35 AC power adaptor.

1 **Lift up the viewfinder.**

2 **Align the right side of the connecting plate with the line on the camcorder, and slide it in to the right.**

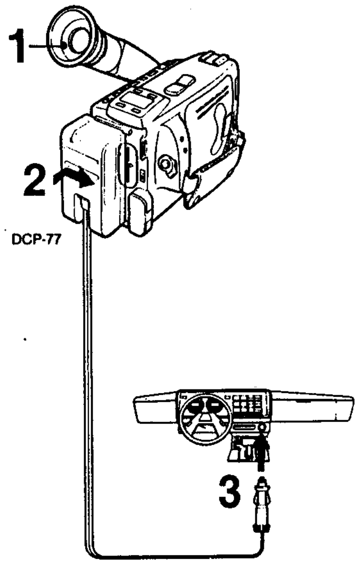
3 **Connect the AC power adaptor to a wall outlet.**

4 **Set CHARGE/VTR to VTR.**

We recommend the use of the AC power adaptor while viewing the playback picture on the TV, editing tapes or recording a TV program, as you do not need to worry about running out of power.
See the instruction manual of the AC power adaptor for details.

Other option
The AC-V55 AC power adaptor can also be used.

(B-7)



Using Car Battery

(B-7)

The DCP-77 DC pack is required (not supplied).

1 **Lift up the viewfinder.**

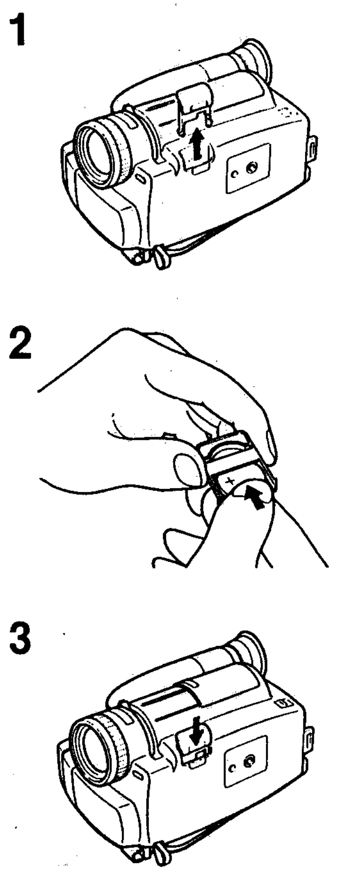
2 **Align the right side of the DC pack with the line on the camcorder, and slide it in to the right.**

3 **Connect the cord to the cigarette lighter socket of a car (12V or 24V).**

To remove the DC pack
While pressing the BATT knob on the recorder, slide the DC pack to the left and pull it out.

Other options
- The DCP-55 DC pack can be used.
- You can also operate this camcorder on a 12V or 24V car battery using the AC-V55 AC power adaptor and the DCC-16AW car battery cord.

(C-1)



Setting the Date and Time

Inserting the Lithium Battery

(C-1)

This camcorder uses a lithium battery to activate the clock in memory. Before operating it for the first time, install the supplied lithium battery.

1. **Pull out the lithium battery holder from the bottom of the camcorder.**
2. **Install the supplied CR2025 lithium battery with the + side facing the other side.**
3. **Put the lithium battery holder back into the camcorder.**

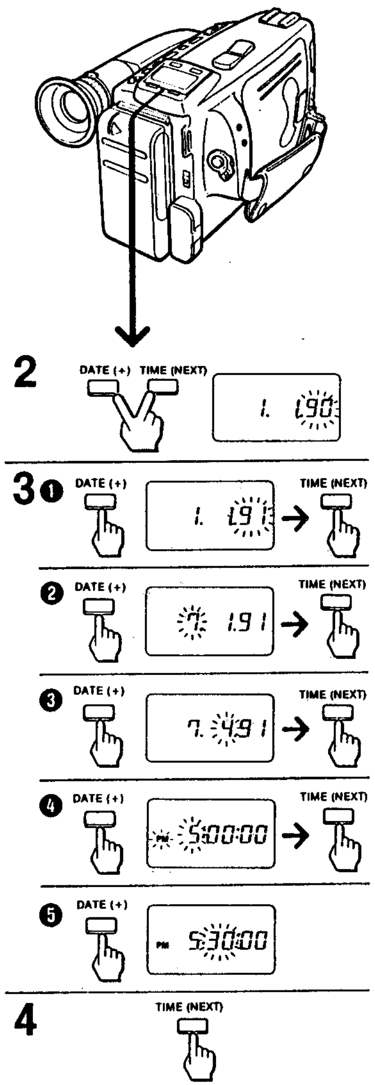
To change the lithium battery
Remove the lithium battery holder from the camcorder, and pull out the lithium battery and insert a new one.

Note on battery life
The battery lasts for approximately 1 year under normal operation.
When the lithium battery becomes weak, the time indication keeps blinking in the display window and blinks in the viewfinder for about 5 seconds when the POWER switch is set to CAMERA. When this happens, **replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery. Use of another battery may present a risk of fire or explosion.**
While replacing the lithium battery, keep the battery pack or other power source attached. If the battery pack or other power source was not attached while replacing, readjustment of the date and time is necessary.

Cautions
- Keep the lithium battery out of the reach of children.
  Should the battery be swallowed, consult a doctor immediately.
- Wipe the battery with a dry cloth to assure good contact.
- Be sure to install the battery with the correct polarity.
- Do not hold the battery with metallic tweezers, as a short-circuit may occur.

WARNING
Battery may explode if mistreated. Do not recharge, disassemble, or dispose of in a fire.

(C-2)



Setting the Date and Time

(C-2)

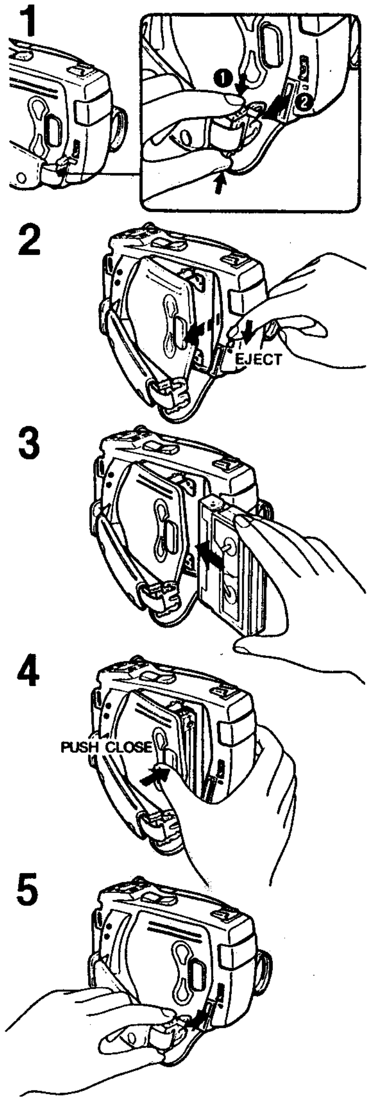
1. **Make sure that a power source is connected, set POWER to CAMERA, and turn STANDBY to STANDBY.**
2. **Press DATE and TIME simultaneously for more than 3 seconds until the date indication appears in the display window. DATE now functions as + (to advance numbers) and TIME functions as NEXT (to execute).**
3. **Set the year, month, day, hour and minute, in this order.**
   First adjust the blinking digits with + and then press NEXT.
4. **Press NEXT to set the second.**
   The clock starts operating.

To correct the date and time setting
Repeat steps 2 to 4.

To advance the digits faster
Keep + pressed.

To check the preset date and time
Press DATE or TIME. When you press the same button again, the indication goes out.

(D-1)



Inserting a Tape

Inserting a Tape

(D-1)

Make sure a power source is connected.

1 **Remove the grip strap.**

2 **While pressing the blue button, press EJECT.**
The cassette holder will open toward you.

3 **Insert the cassette with window facing out.**

4 **Press PUSH CLOSE on the cassette holder to close it.**

5 **Attach the grip strap.**

Ejecting the Tape

Make sure that a power source is connected.

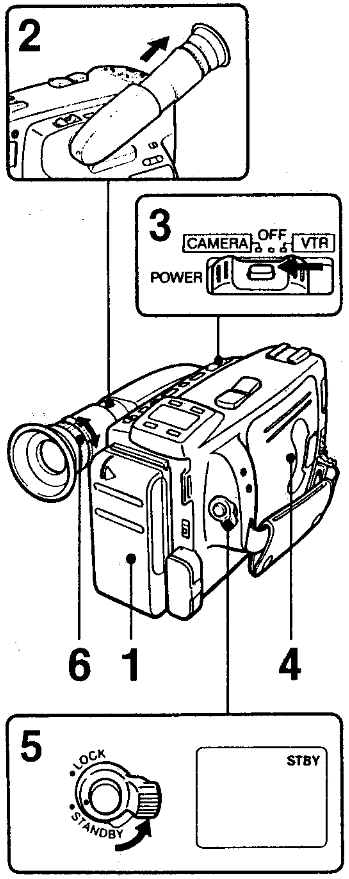
1 **Remove the grip strap.**

2 **Press EJECT.**
The cassette holder will open toward you.

3 **Take out the cassette and press PUSH CLOSE on the cassette holder to close it.**

4 **Attach the grip strap.**

(E-1)



Adjusting the Viewfinder Lens

The position of the viewfinder lens for optimum vision varies depending on the person. Adjust when using the first time, or when using after someone else.

(E-1)

1 **Make sure a power source is connected.**

2 **Pull the viewfinder out until it clicks.**

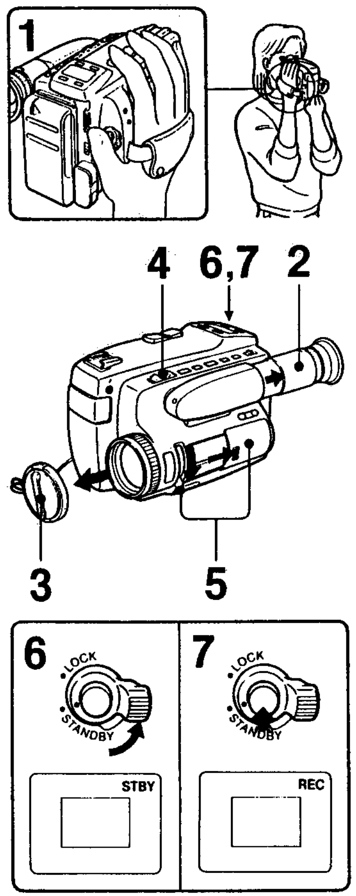
3 **While pressing the green button, set POWER to CAMERA.**

4 **Insert a tape. (See page 20.)**

5 **Turn STANDBY to STANDBY.**

6 **Turn the viewfinder lens adjustment ring so that the "STBY" display in the viewfinder screen comes into sharp focus.**

(E-2)



Recording a Picture Using Automatic Adjustments

Before recording "once-only" events, we strongly recommend making a trial recording and checking that everything is working properly.

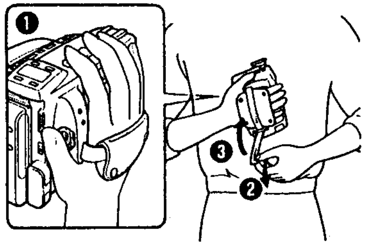
(E-2)

1. **Hold the camcorder as illustrated.**
   Put your hand through the grip strap and check that your thumb can easily touch START/STOP.
2. **Make sure that the viewfinder is pulled out.**
3. **Remove the lens cap and hook it on the grip strap.**
4. **While pressing the green button, set the POWER to CAMERA.**
5. **Close the AUTO LOCK cover and turn the zoom lever downwards.**
6. **Turn STANDBY to STANDBY.**
   "STBY" and the autofocus frame appear in the viewfinder.
   The camcorder is now in the standby mode, and focus is adjusted automatically inside the frame (autofocus adjusting range). Do not turn or stop the focus ring forcibly.
7. **Press START/STOP.**
   "REC" appears and the red lamp lights up in the viewfinder. The camcorder is now recording.

To pause (to stop momentarily)
Press START/STOP again.
"STBY" appears in the viewfinder. The camcorder is in the standby mode again.

To stop
Turn STANDBY to LOCK and set POWER to OFF.

(E-3)



How to fit the grip strap (E-3)
In step 1 on the previous page, hold the camcorder against your body (❶) and pull the grip strap upward (❷, ❸).

Notes on recording

- To record from the beginning of the tape, run the tape for about 15 seconds before recording. This will avoid missing the starting point when the tape is played back.
- If POWER is moved during recording, the tape will stop.
- When moving from indoors to outdoors, or vice versa, slide STANDBY up and point the camcorder at a white object for about 15 seconds so that the white balance is properly adjusted.
- The autofocus frame is not recorded.

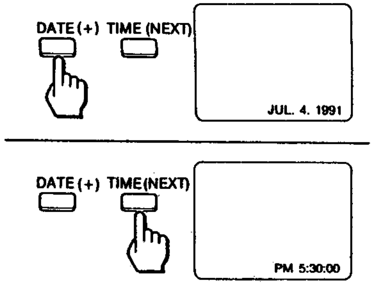
Note on the standby mode
If you leave the camcorder in the standby mode for 5 minutes or more, the camcorder will be turned off automatically. To resume the standby mode, turn STANDBY to LOCK once and turn it to STANDBY again. To start recording, press START/STOP directly.

Note on light sources
If you are shooting a subject under bright conditions just after shooting in a dark place, the picture may not appear in the viewfinder. In this case, point the camcorder in another direction.

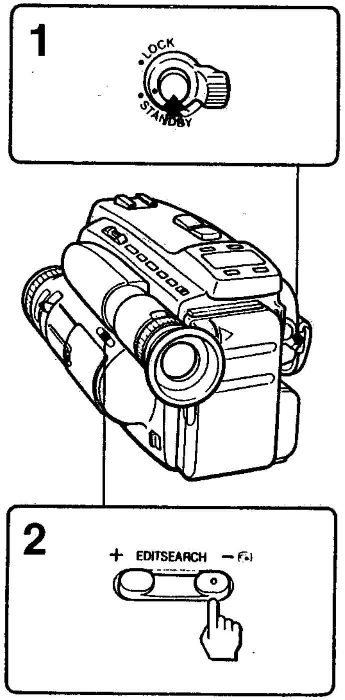
Recording mode
An 8 mm video format cassette records in the SP (standard play) mode and can play back in the SP and the LP (long play) modes.
The quality of the playback picture in the LP mode, however, will not be as good as that in the SP mode.

Note on PCM recording and playback
PCM recording or playback is not possible with this camcorder. The PCM sound recorded or after-recorded with another video recorder cannot be played back with this camcorder.

(E-4)



(E-5)



To Record Date or Time

(E-4)

During camera recording or when in the recording pause mode, press DATE for date indication or TIME for time indication.
The date or time displayed in the viewfinder is recorded with the picture.

To stop recording date or time
Press DATE or TIME again.
The picture recording continues.

To Check the Last Portion of the Previous Recording

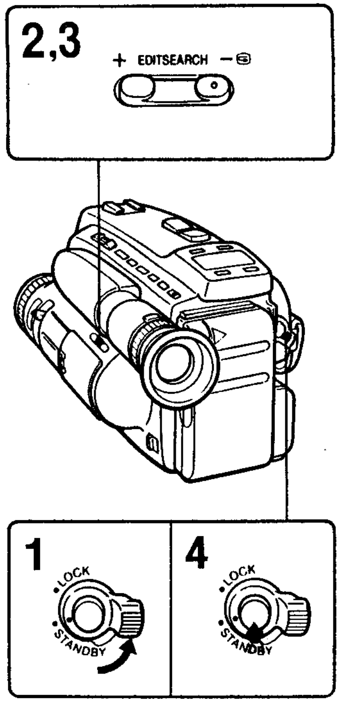
(E-5)

1 Set the camcorder in the recording pause mode by pressing START/STOP.

2 Press – side of EDITSEARCH (⊜) momentarily.
The last few seconds of the recorded portion are rewound and then the recorded picture appears in the viewfinder. After a few seconds of playback, the camcorder goes back to the recording pause mode.

If the picture has not been recorded
The video heads may be contaminated. Clean the heads using the Sony V8-25CLH video head cleaning cassette or equivalent.

(E-6)



To Re-record a Previously Recorded Portion

(E-6)

1 Turn STANDBY to STANDBY to set the camcorder to the standby mode.

2 Look in the viewfinder and find the point from where you want to begin the recording by :
Keeping the + side of EDITSEARCH pressed to advance the picture at the normal playback speed, or the – side to reverse the picture playback.

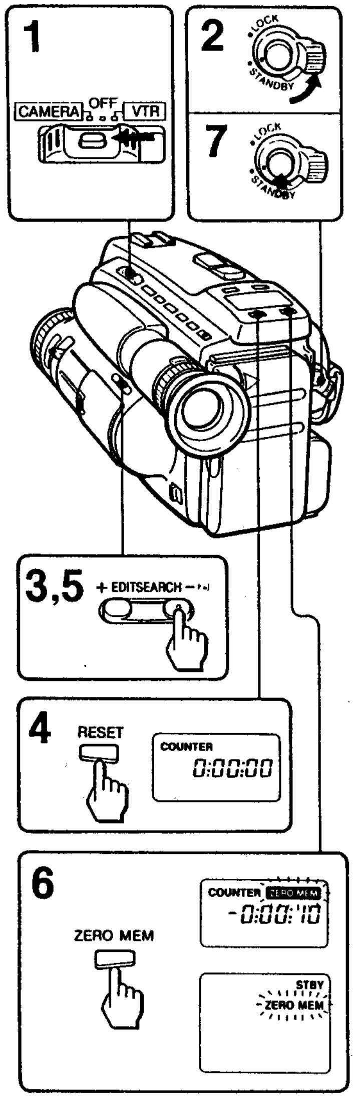
3 At the desired point, release EDITSEARCH.

4 Press START/STOP to start recording.

The picture is connected smoothly after the prerecorded portion even if STANDBY is set to LOCK and STANDBY or even if the power is turned off and on again, provided that the tape is not removed.

To stop
Turn STANDBY to LOCK and set POWER to OFF.

(E-7)



To Re-record a Picture in the Middle of a Recorded Tape (Insert Recording)

(E-7)

1 **While pressing the green button, set POWER to CAMERA.**

2 **Turn STANDBY to STANDBY to set the camcorder to the standby mode.**

3 **While looking in the viewfinder, keep pressing the + or – side of EDITSEARCH and release the button where you want to end the insertion.**
The camcorder is set to the standby mode again.

4 **Press RESET.**
The counter is reset to zero.

5 **While looking in the viewfinder, keep pressing the – side of EDITSEARCH and release the button at the point where you want to start the insertion.**

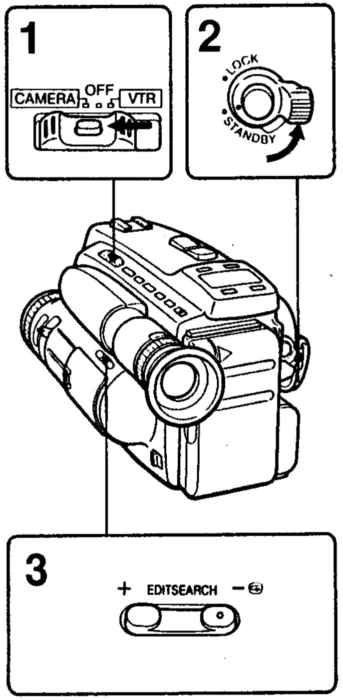
6 **Press ZERO MEM.**
The insert ending point is stored in memory.

7 **Press START/STOP.**
Insert recording begins, and stops automatically near the counter zero point.

To cancel ZERO MEM
Press ZERO MEM.

Note
The picture may be distorted at the end of the inserted portion when it is played back.

(E-8)



Playing Back the Picture Instantly

(E-8)

You can check the recorded picture in the viewfinder. Sound is not heard.

1 **While pressing the green button, set POWER to CAMERA.**

2 **Turn STANDBY to STANDBY.**

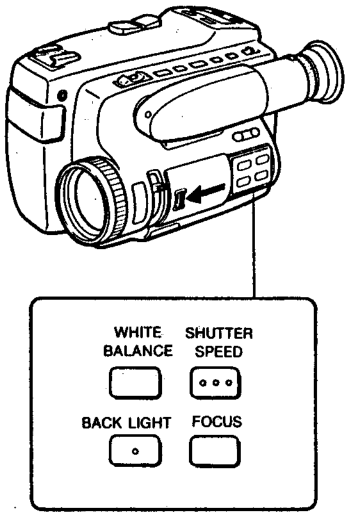
3 **Keep pressing the + or – side of EDITSEARCH to play back the picture.**
- **+ side:** to view the playback picture
- **– side:** to view the playback picture in reverse

To stop playback
Release EDITSEARCH.

To monitor the sound while viewing the playback picture in the viewfinder
Connect the earphone (not supplied) to the 🎧 jack.

1 While pressing the green button, set POWER to VTR.
2 Press ◀◀ to rewind the tape and press ☐ where you want to stop.
3 Press ▷ to start playback.

(F-1)



Selecting the Automatic/Manual Adjustment

When you close the AUTO LOCK cover, the focus and white balance are adjusted automatically, and the shutter speed is set to 1/60.
The automatic function offers you worry-free operation under most shooting conditions. But under certain circumstances, manual adjustment is better for effective recording. For manual adjustment, while pressing PUSH SLIDE, open the AUTO LOCK cover and select an appropriate setting.

What Each Button Does

(F-1)

WHITE BALANCE:
Press to lock the white balance in the ☀ (outdoors), 💡 (indoors), or HOLD mode. The tone of colors is fixed regardless of the lighting condition. (See page 32.)

SHUTTER SPEED:
Press to increase the shutter speed to record a fast-moving subject, such as a golf or tennis swing, clearly. (See page 35.)

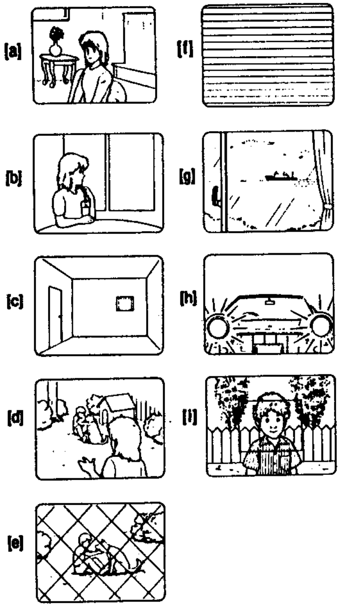
BACK LIGHT:
Press when a subject appears dark against a bright background. (See page 37.)

FOCUS:
Press to set the camcorder in the manual focusing mode.
Once the focus is adjusted manually, the setting is locked. (See page 30.)

Even if you open the AUTO LOCK cover
The setting of each button is the same as the automatic adjustment until you change it.

Notes
- Even when you set POWER to OFF, the previous settings are retained. They are cancelled if the power source is disconnected.
- If you close the AUTO LOCK cover after you have made manual adjustment and then open it again, the settings for manual adjustment will be recalled.

(G-1)



Manual Focusing

When you close the AUTO LOCK cover, you can easily get a focused picture under most shooting conditions. But manual focusing is recommended in the following cases.

[a] to [i] correspond to the illustrations. **(G-1)**

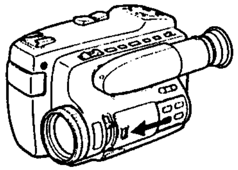
[a] Insufficient light
[b] Too much brightness behind the subject
[c] Subject with little contrast—wall, sky, etc.
[d] One subject is close; the other is in the center, but at a distance
[e] Subjects beyond nets, etc., or another subject passes in front of the camcorder
[f] Horizontal stripes
[g] Subject through frosted glass
[h] Bright subject or subject reflecting light
[i] High contrast behind the subject (the background may be focused)
[j] Under the following circumstances
- When using conversion lenses of effect filters
- When shooting a stationary subject using a tripod
- To save battery wear

Autofocusing does not function momentarily when:
- The setting of the shutter speed is changed.
- Back light is adjusted manually.
- Lighting conditions change quickly.
- Zooming is done from wide-range to telephoto.

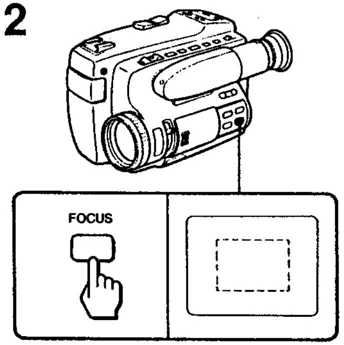
This camcorder keeps in focus by referring to the picture contrast, which is weak in the above situations.

(G-2)

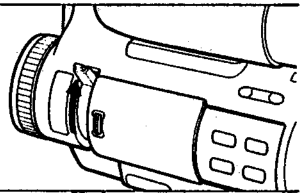
1



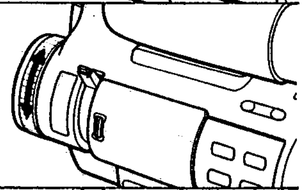
2



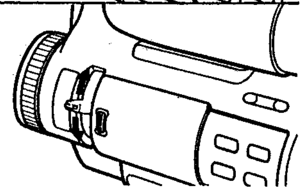
3



4



5



Manual Focusing

Focusing Manually

(G-2)

1 **Slide open the AUTO LOCK cover.**

2 Press FOCUS.
Make sure that the autofocus frame goes out in the viewfinder.

3 **Turn the manual zoom lever fully to the telephoto position.**

4 **Turn the focus ring to achieve sharp focus.**

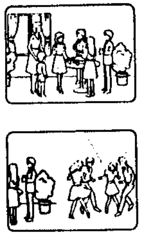
5 **Set the desired shot length using the manual zoom lever.**

Some helpful hints

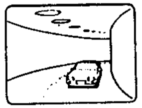
- When shooting in relatively dark places such as indoors, the depth of field in proper focus is very shallow. For best results, shoot at wide angles after focusing in telephoto.
- When shooting a scene with lots of movement in bright light, set the zoom lever to the wide-angle position and the focus ring to 2m.

(H-1)

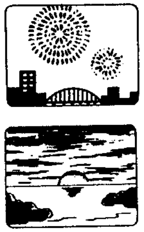
[a]



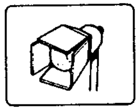
[d]



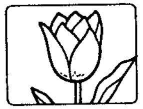
[e]



[b]



[c]



Adjusting the White Balance

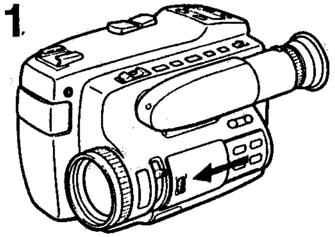
When you close the AUTO LOCK cover, the auto white balance function of this camcorder adjusts the picture to natural colors under most shooting conditions. However, in the conditions listed below, adjust the white balance manually.

[a] to [e] correspond to the illustrations (H-1)

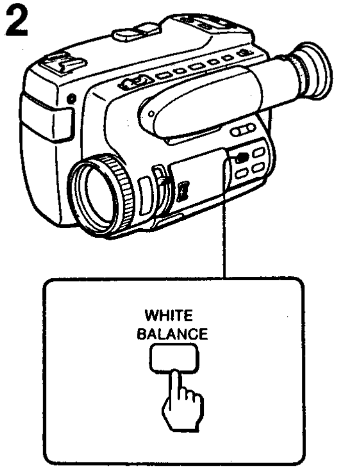
	Conditions	Indication in the viewfinder
[a]	Lighting conditions change quickly	💡
[b]	Too bright, such as in photograph studios	
[c]	Monochromatic subject or background	HOLD
[d]	Under sodium lamp	💡
	Under mercury lamp	
	Under a color matching fluorescent lamp	☀
[e]	Recording: • a sunrise/sunset • after sunset • before sunrise e.g. neon signs, fireworks	

(H-2)

1



2



Adjusting the White Balance

Adjusting the White Balance Manually

(H-2)

1 **Slide open the AUTO LOCK cover.**

2 **Select the desired white balance mode by pressing WHITE BALANCE.**
Each time you press the button, the indication changes as follows.

No indication (auto) → HOLD → ☀ → 💡
↑_______________________________________|

What is the HOLD mode?
The HOLD mode allows you to film in natural colors by keeping light sources at a certain color temperature. Initially the camcorder is in auto mode and is set to the appropriate white balance. When you set the camcorder to the HOLD mode, it will hold that temperature even if you record subjects with different light sources. You can record subjects with natural colors without being affected by the surroundings.

To set the HOLD mode

1 **Close the AUTO LOCK cover.**
The white balance will be set to the automatic mode.

2 **Point at a white, flat object such as a white wall or paper and record it for about 15 seconds.**

3 **Press WHITE BALANCE to display the HOLD mark in the viewfinder.**
When you change the battery pack or when the light source is changed, follow this procedure again.

Color Temperature and White Balance

The color temperature indicates a property of light and is measured in K (Kelvin). It increases as the light source gets bluer and decreases as the light source gets redder. It has no direct relationship with brightness.
The camcorder automatically adjusts the white balance within the range shown below.

Color temperature (K)	Light source
↑ 10,000	Clear
8,000	
Blue	Slightly overcast
7,000	Cloudy, rainy
6,000	Fluorescent lamp (daylight)
5,000	
White	Direct sunlight
	Fluorescent lamp (daylight)
4,000	1 hr. after/before sunrise/sunset
3,500	↑ Fluorescent lamp (off-white)
	Studio lamp
	Halogen lamp
3,200	
3,000	
Yellow	Tungsten lamp
2,500	30 min. after/before sunrise/sunset
Red	↓
2,000	Sunrise/sunset
↓	Candlelight

(I-1)

Setting the Shutter Speed

When a fast-moving subject is recorded at normal shutter speed, it may not be seen clearly when played back in the pause mode (still picture). This can be improved by increasing the shutter speed. Six shutter speeds can be selected:1/60 (normal speed), 1/100, 1/250, 1/1000, 1/2000 or 1/4000 of a second. **(I-1)**

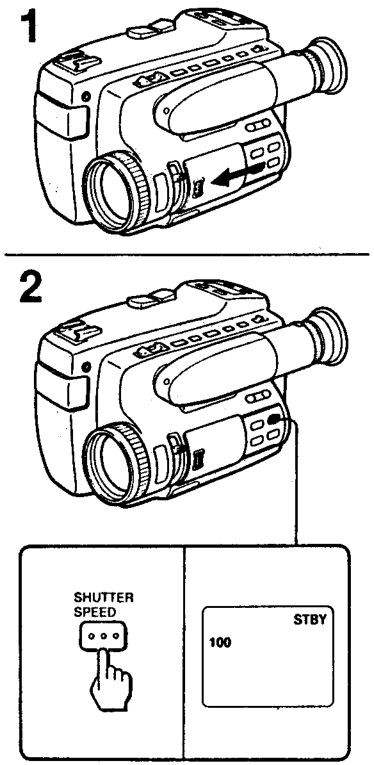
When recording at a high-speed shutter setting, record in a brighter place than usual.
Also, the depth of field in proper focus becomes shallow at a higher shutter speed. This is effective to record the main subject in sharp focus and the surroundings out of focus.

Recommended setting for your situation
Choose an appropriate shutter speed according to the situation, referring to the chart for examples.

Example use	Recommended shutter speed
• On clear days, recording a golf or tennis swing (To view the hit ball clearly in the still picture mode, set to 1/4000) • Recording skiers	1/4000 or 1/2000
• On overcast days, recording a moving merry-go-round or roller coaster • Recording outdoors from inside a vehicle (for stable shooting)	1/1000 or 1/250
• Instead of the ND2 filter (To reduce the exposure level to about a half) • Recording indoor sports (for stable shooting)	1/100

When playing back the picture recorded at certain speeds
Use 8mm video equipment with the clean still function to obtain a noiseless still picture.

(I-2)



Selecting the Shutter Speed

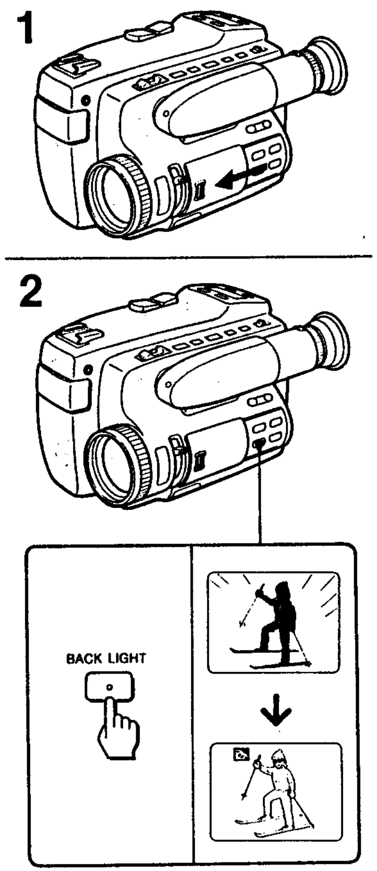
(I-2)

1. **Slide open the AUTO LOCK cover.**
2. **Press SHUTTER SPEED repeatedly until the desired shutter speed indication appears.**
   Each time you press the button, the indication changes as follows.

   No indication (1/60) → 100 (1/100) → 250 (1/250)
   ↑ ↓
   4000 (1/4000) ← 2000 (1/2000) ← 1000 (1/1000)

Notes
- When you select a shutter speed 1/250 or faster, record under sunlight or use a video light.
- When you record a TV screen with certain shutter speeds, the brightness of the recorded picture may vary.
- When you shoot a very bright subject at a faster shutter speed, a light vertical, belt-like line (smear) may appear on the screen.
- When you record at certain shutter speeds under a light discharges tube, such as a fluorescent lamp, sodium lamp, or mercury lamp, the brightness of the recorded picture may vary (causing the picture to flicker).

(J-1)



Shooting with Backlighting

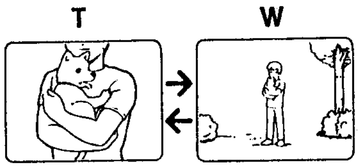
In this camcorder, the exposure is automatically controlled. However, when shooting a subject that is backlit, that is, if the light source is behind the subject, use BACK LIGHT **(J-1)**

1 Slide open the AUTO LOCK cover.

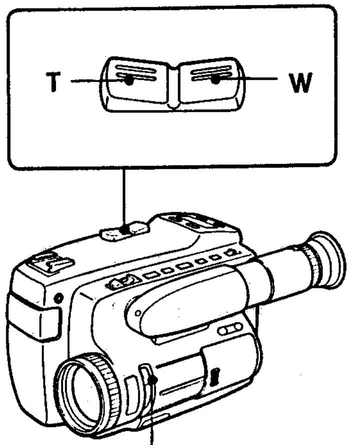
2 Press BACK LIGHT.
The ▨ indication appears.

After shooting
Be sure to release this adjustment setting by pressing BACK LIGHT again.
(The ▨ indication goes out.)
Otherwise, the recorded picture will be too bright.

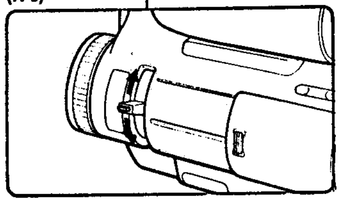
(K-1)



(K-2)



(K-3)



Zooming

The size of the subject in the screen can be changed. Use "zoom-in" for dramatic close-ups. Use "zoom-out" for panoramic long shots. Also use zooming to focus manually or to decide the shooting angle. **(K-1)**

Power Zooming

— for smooth and constant zooming (K-2)

Press the T side of the power zoom button for telephono (subject appears closer) and the W side for wide-angle (subject appears farther away).

Zooming Manually

— for creating a dramatic effect (K-3)

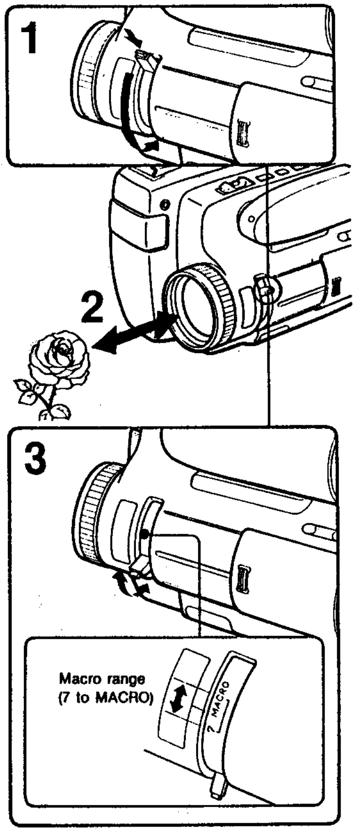
Turn the manual zoom lever upward for telephoto and downward for wide-angle.
Be sure to keep pressing the button on the lever when turning it downward.

Focal length of this camcorder
The focal length is 7 mm to 56 mm (9/32 to 2 3/4 inches). This means approximately 50 mm to 400 mm (2 to 15 3/4 inches) when converted into the focal length of a 35-mm camera.

For more zooming effect
Use the Sony VCL-0637 or VCL-1437 conversion lens (not supplied).
If you use a 46 mm conversion lens, attach it using the supplied step-up-ring. Autofocus, however will not function in that case. For details, consult your Sony dealer.

When shooting with autofocusing
When you set the zoom lever to the wide angle position, the focus ring will be fixed around the 2 m position and may not exactly match the actual object-to-camera distance.

(L)



Close-Up (Macro)

Even tiny subjects, such as flowers, insects, and photographs, can literally fill the screen. (L)

1 **Turn the zoom lever to the MACRO position, pressing the green macro set button.**

2 **Bring the camcorder as close as necessary to obtain the desired size of image.**
The subject can be as close as a minimum of 10 mm (7/16 inch) from the lens surface.

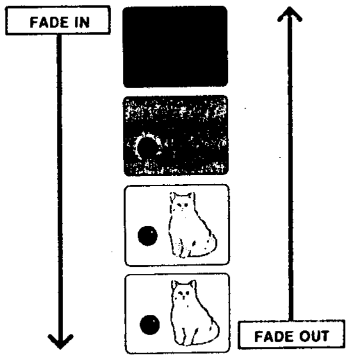
3 **Turn the zoom lever within the MACRO range to focus sharply.**

In the MACRO range, autofocusing does not function.

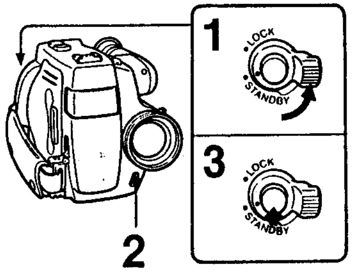
Notes

- When shooting in macro, the depth of field is very shallow. So pay attention to focusing. To keep the subject in focus, use a tripod.
- If the subject is closer than 10 mm (7/16 inch), it cannot be brought into focus.

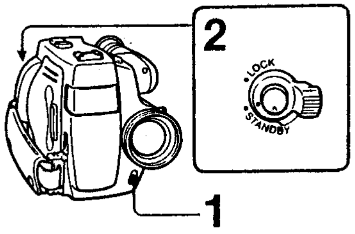
(M-1)



(M-2)



(M-3)



Fade-in and Fade-out

When fading-in, the picture will gradually appear from a black screen. The sound will also gradually increase.
When fading-out, the picture will gradually disappear to a black screen. The sound will also gradually decrease.
This function will give your recording a professional appearance. **(M-1)**

To Fade-in

(M-2)

1 **Turn STANDBY to STANDBY to set the camcorder in the standby mode.**

2 **Press FADER.**
The "FADER" indication appears in the viewfinder.

3 **Press START/STOP.**
Fade-in is performed and then recording will start.

To Fade-out

(M-3)

1 **While recording, press FADER.**
The "FADER" indication appears in the viewfinder.

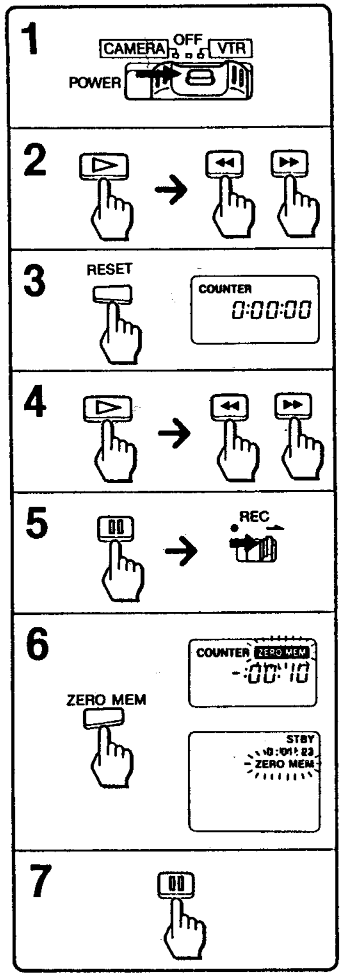
2 **Press START/STOP to stop the recording.**
Fade-out is performed and then recording stops.

To cancel the fade-in/fade-out function before it is performed
Press FADER again before pressing START/STOP.

If you want to use the fade-in/fade-out function repeatedly
Start from step 1 each time.

When the date is displayed
The date does not fade-in or fade-out.

(S-1)


1
CAMERA
OFF
VTR
POWER
2
3
RESET
COUNTER
0:00:00
4
5
REC
6
COUNTER
ZERO MEM
-00:10
ZERO MEM
STBY
0:01:23
ZERO MEM
7

Insert Recording

You can insert a new scene from a VCR or the TV onto your originally recorded tape. (S-1)

Before You Begin

- Connection is the same as in "Recording from a TV or Another VCR."
- Set CHARGE/VTR of the AC power adaptor to VTR, when you use it as a power source.
- Set the VCR in the playback pause mode at the beginning of the desired scene.

Operation

1 **Set POWER of the camcorder to VTR and display the counter in the display window.**

2 **Locate the point where the insert should end by pressing ◀◀ or ▶▶** during playback. The viewfinder screen shows a high-speed playback picture.

3 **At the end point, press RESET.**
The counter is reset to "0:00:00."

4 **Locate the point where the insert should start.**

5 **At the start point, set the camcorder into recording pause mode.**

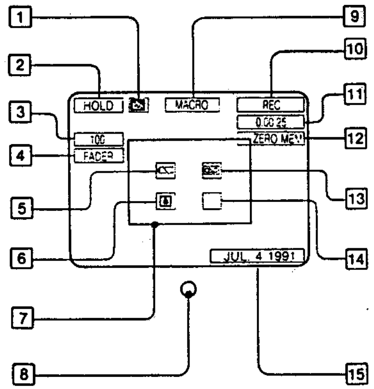
6 **Press ZERO MEM.**
The end point of the insert is stored in memory.

7 **Press ⏸ on both units to start insert recording.**
You can monitor the picture to be inserted in the viewfinder screen.

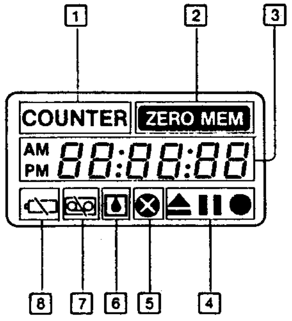
The insert recording will stop automatically near the zero point on the counter.

To change the end point
Press ZERO MEM so that the ZERO MEMO indicator disappears, and repeat from step 2.

(V-1)


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
HOLD
MACRO
REC
0:00:25
ZERO MEM
100
FADER
JUL. 4 1991

(V-2)


1
2
3
COUNTER
ZERO MEM
AM
PM
88:88:88
8
7
6
5
4

Indications Inside the Viewfinder and the Display Window

Inside the Viewfinder

[1] **BACK LIGHT is pressed.**

[2] **White balance mode (☀ / 💡 /HOLD)**

[3] **Shutter speed**

[4] **FADER is pressed.**

[5] **"Replace battery."**

[6] **Moisture condensation.**

[7] **Autofocus adjusting range**
Goes out during manual focusing

[8] **Shows up during recording.**
When blinking: "Replace battery."

[9] **In the MACRO range**

[10] **Tape transport and camera recording mode**

[11] **Tape counter**

[12] **ZERO MEM is pressed.**

[13] **"Exchange tape."**

[14] **"Clean video heads." or other caution (⊗, ⏏)**

[15] **Date or time**

Display Window

(V-2)

[1] **Tape counter**

[2] **ZERO MEM is pressed.**

[3] **Date or time/tape counter**

[4] **Tape transport**

[5] **Caution**

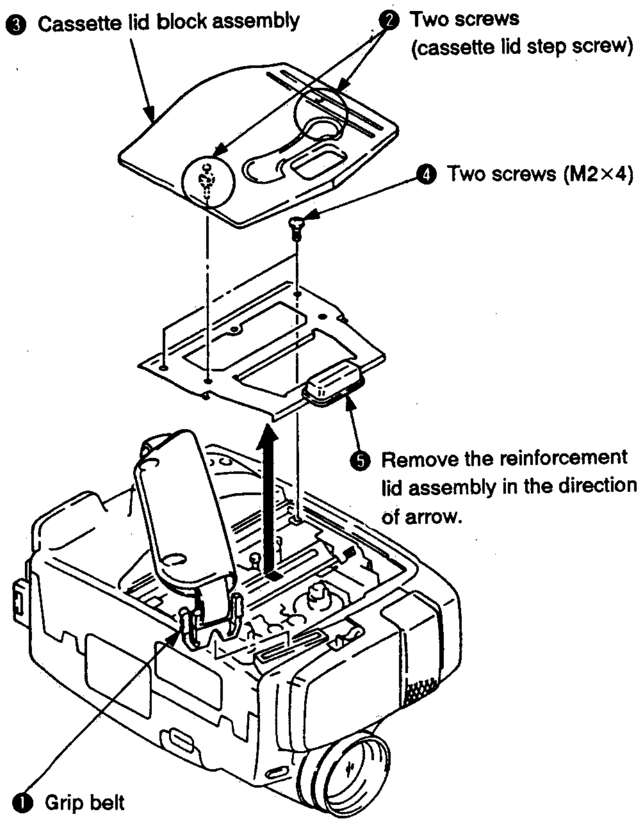
[6] **Moisture condensation**

[7] **Exchange tape**

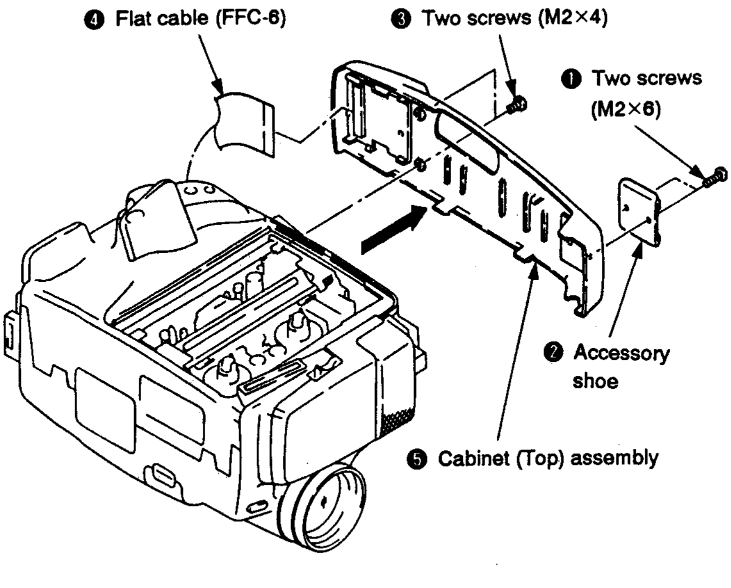
[8] **Replace battery**

SECTION 2
DISASSEMBLY

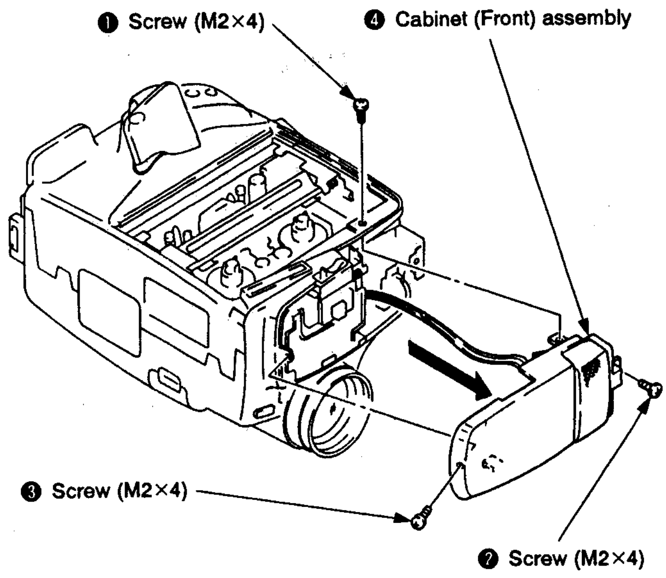
2-1. REMOVAL OF CASSETTE LID BLOCK ASSEMBLY


❸ Cassette lid block assembly
❷ Two screws (cassette lid step screw)
❹ Two screws (M2×4)
❺ Remove the reinforcement lid assembly in the direction of arrow.
❶ Grip belt

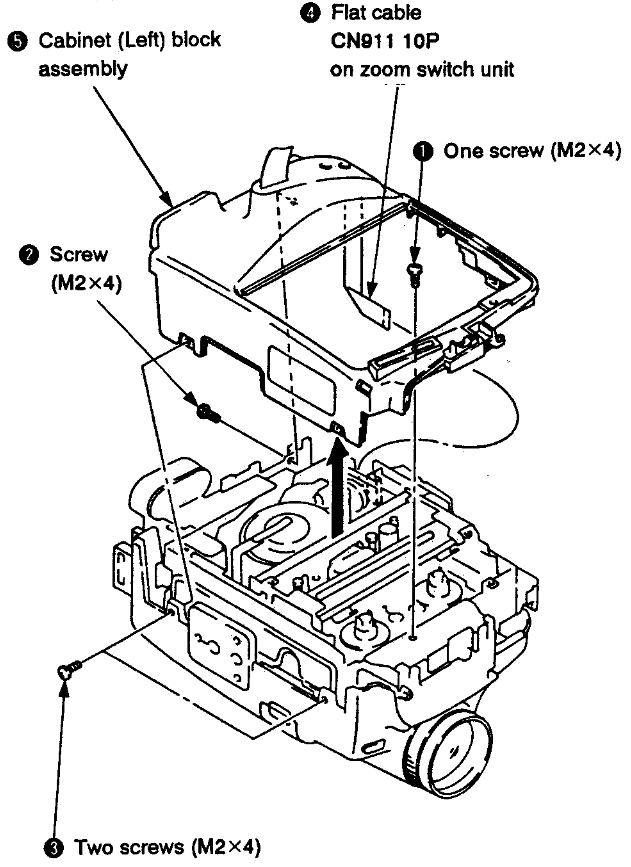
2-2. REMOVAL OF CABINET (TOP) ASSEMBLY


❹ Flat cable (FFC-6)
❸ Two screws (M2×4)
❶ Two screws (M2×6)
❷ Accessory shoe
❺ Cabinet (Top) assembly

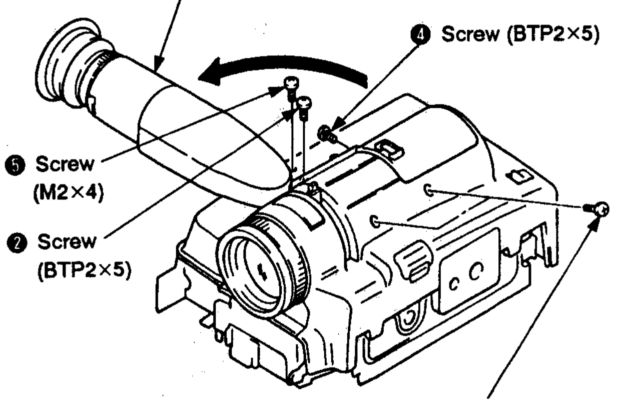
2-3. REMOVAL OF CABINET (FRONT) ASSEMBLY


❶ Screw (M2×4)
❹ Cabinet (Front) assembly
❸ Screw (M2×4)
❷ Screw (M2×4)

2-4. REMOVAL OF CABINET (LEFT) BLOCK ASSEMBLY


❹ Flat cable CN911 10P on zoom switch unit
❺ Cabinet (Left) block assembly
❶ One screw (M2×4)
❷ Screw (M2×4)
❸ Two screws (M2×4)

2-5. REMOVAL OF VTR AND CAMERA BLOCK



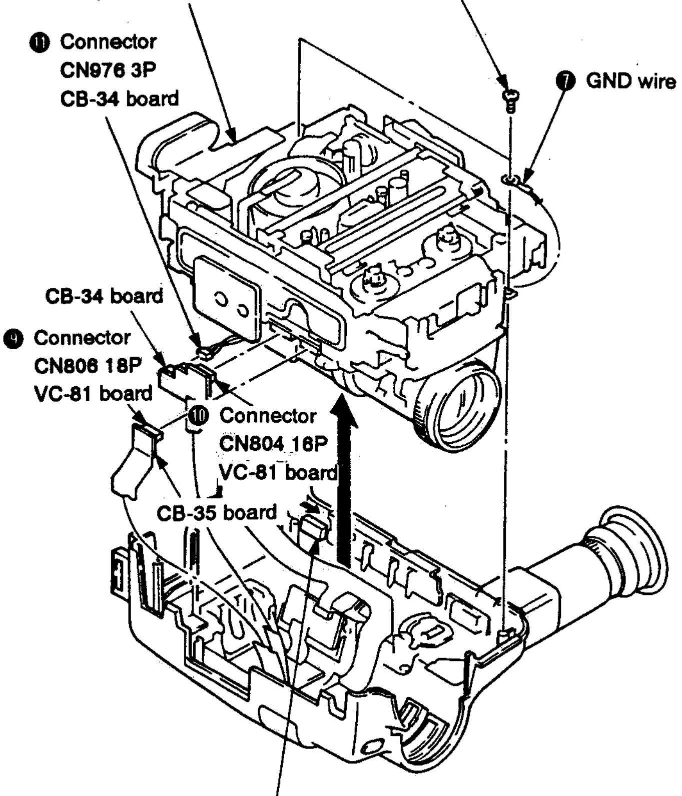
③ Move the EVF asssembly in the direction of arrow.

④ Screw (BTP2×5)

⑤ Screw (M2×4)

② Screw (BTP2×5)

① Two screws (BTP2×5)
Note: It is set slantwiss.



⑧ Lift up the VTR and CAMERA blocks in the direction of arrow. (**Note:** In the this state remove respective connectors)

⑥ Two screws (BTP2×5)

⑪ Connector CN976 3P CB-34 board

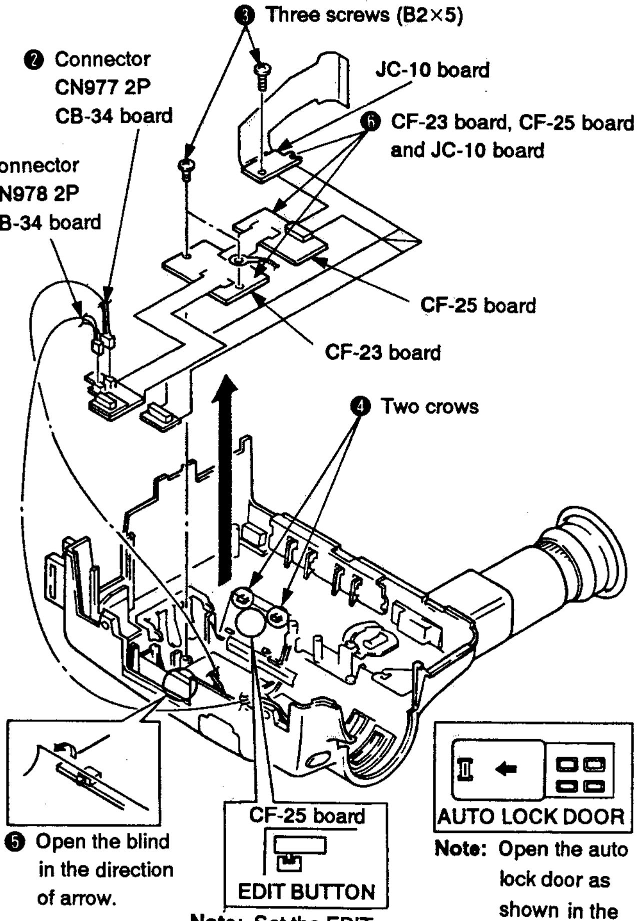
⑦ GND wire

⑨ Connector CN806 18P VC-81 board

⑩ Connector CN804 16P VC-81 board

Note: When installing cabinet (right) block assembly, set the holder knob the direction of arrow.

2-6. REMOVAL OF CF-23 BOARD, CF-25 BOARD AND JC-10 BOARD



③ Three screws (B2×5)

② Connector CN977 2P CB-34 board

① Connector CN978 2P CB-34 board

⑥ CF-23 board, CF-25 board and JC-10 board

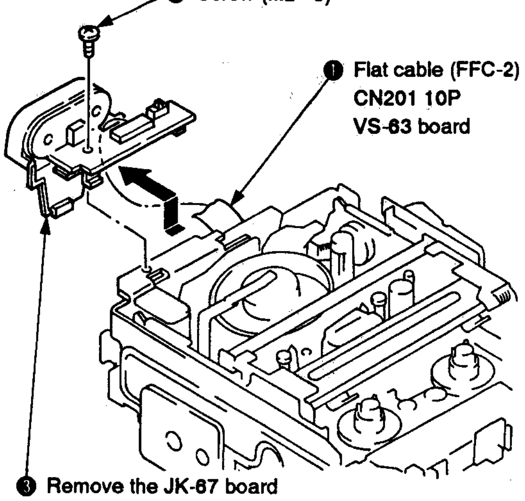
④ Two crows

⑤ Open the blind in the direction of arrow.

Note: Set the EDIT button as shown in the figure when mounting the CF-25 board.

Note: Open the auto lock door as shown in the figure when mounting the CF-23 board.

2-7. REMOVAL OF JK-67 BOARD

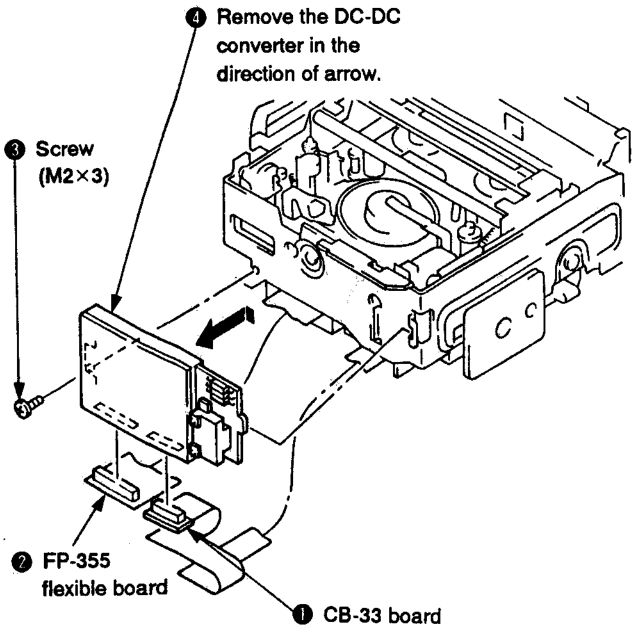


② Screw (M2×3)

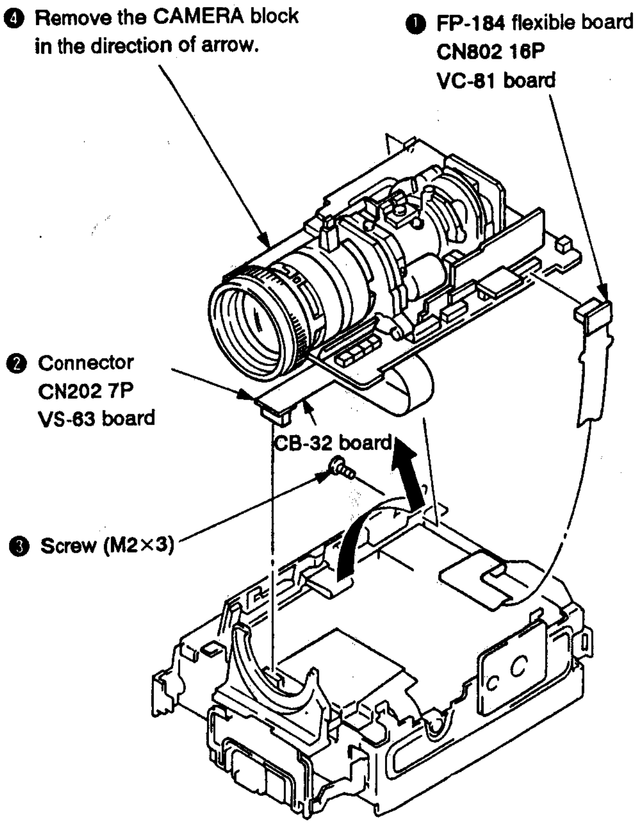
① Flat cable (FFC-2) CN201 10P VS-63 board

③ Remove the JK-67 board in the direction of arrow.

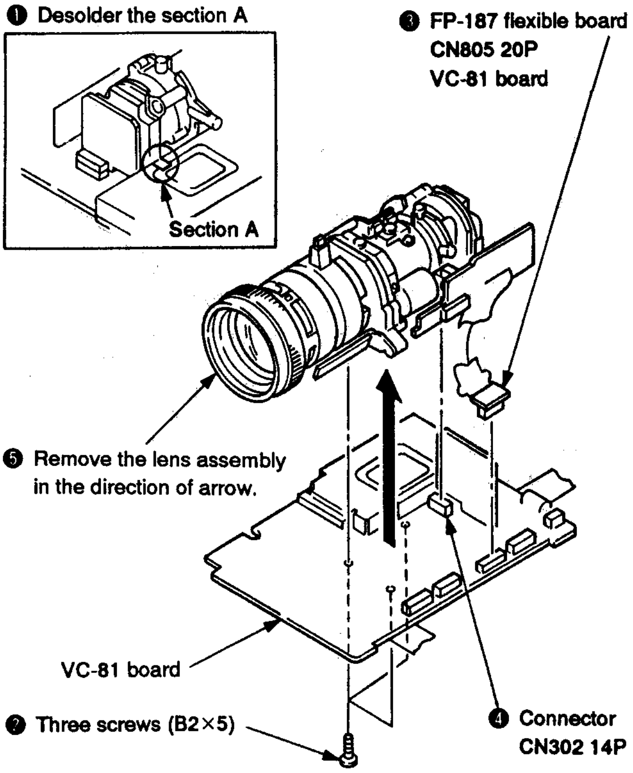
2-8. REMOVAL OF DC-DC CONVERTER UNIT


❹ Remove the DC-DC converter in the direction of arrow.
❸ Screw (M2×3)
❷ FP-355 flexible board
❶ CB-33 board

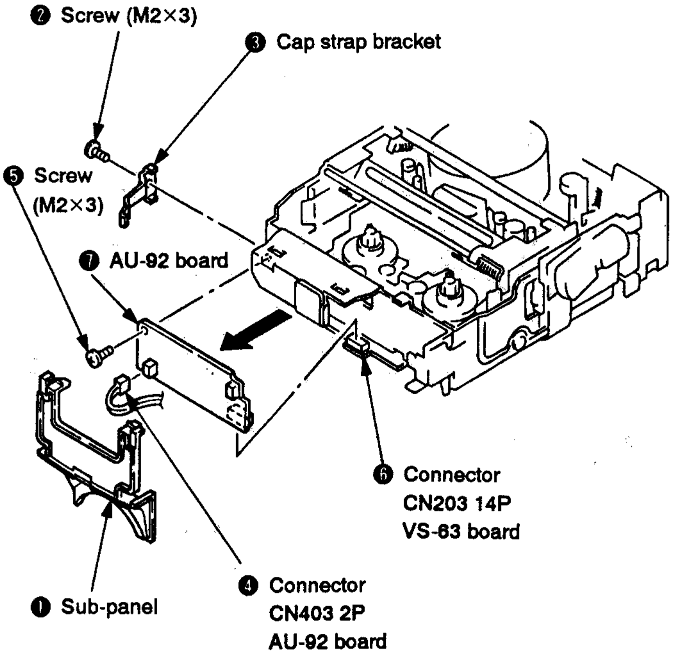
2-9. REMOVAL OF CAMERA BLOCK


❹ Remove the CAMERA block in the direction of arrow.
❶ FP-184 flexible board
CN802 16P
VC-81 board
❷ Connector
CN202 7P
VS-63 board
CB-32 board
❸ Screw (M2×3)

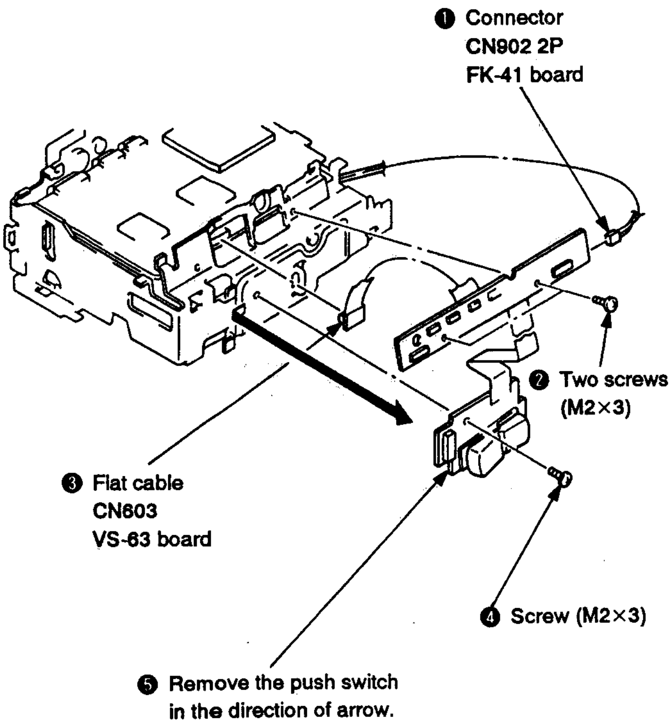
2-10. REMOVAL OF LENS ASSEMBLY


❶ Desolder the section A
Section A
❸ FP-187 flexible board
CN805 20P
VC-81 board
❺ Remove the lens assembly in the direction of arrow.
VC-81 board
❷ Three screws (B2×5)
❹ Connector
CN302 14P

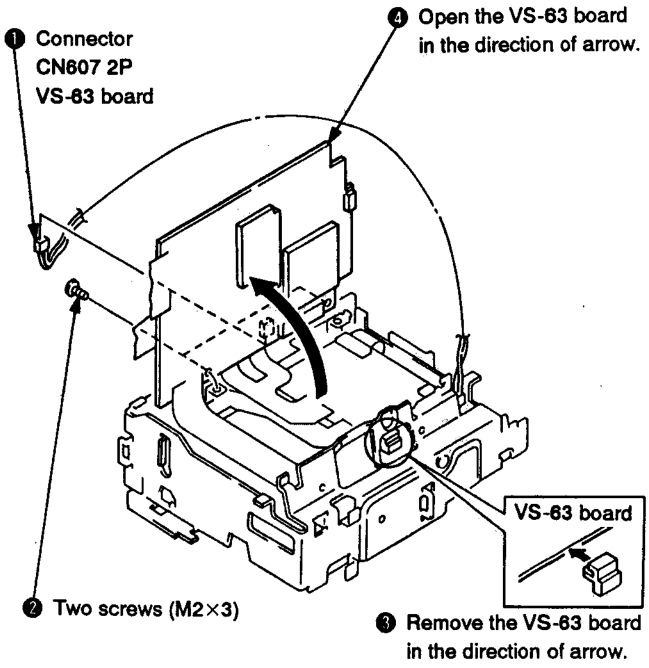
2-11. REMOVAL OF AU-92 BOARD

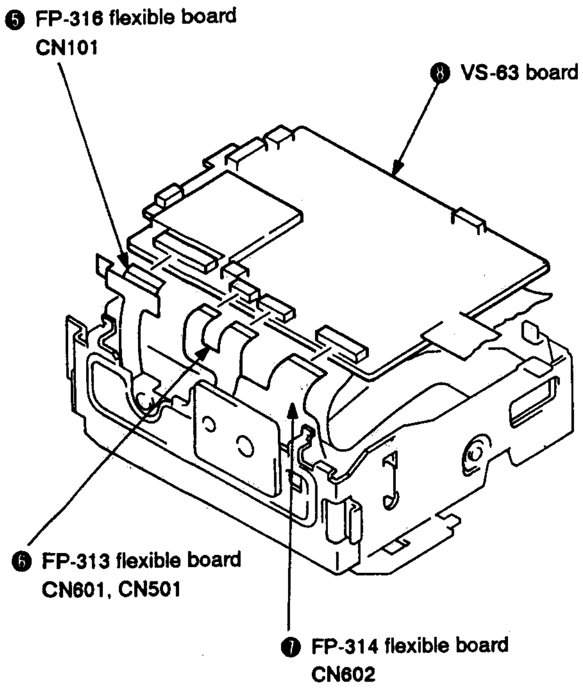

❷ Screw (M2×3)
❸ Cap strap bracket
❺ Screw (M2×3)
❼ AU-92 board
❻ Connector
CN203 14P
VS-63 board
❶ Sub-panel
❹ Connector
CN403 2P
AU-92 board

2-12. REMOVAL OF FK-41 AND PUSH SWITCH

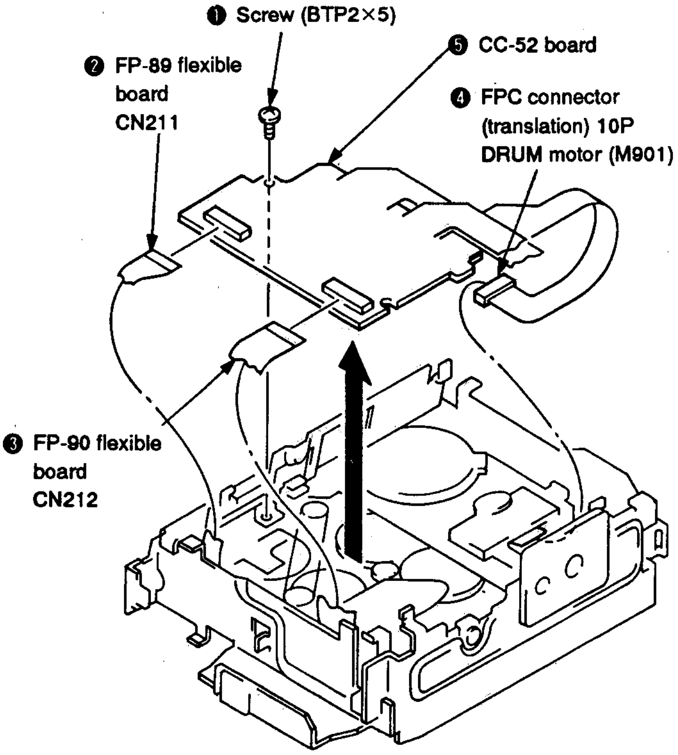

❶ Connector
CN902 2P
FK-41 board
❷ Two screws
(M2×3)
❸ Flat cable
CN603
VS-63 board
❹ Screw (M2×3)
❺ Remove the push switch
in the direction of arrow.

2-13. REMOVAL OF VS-63 BOARD

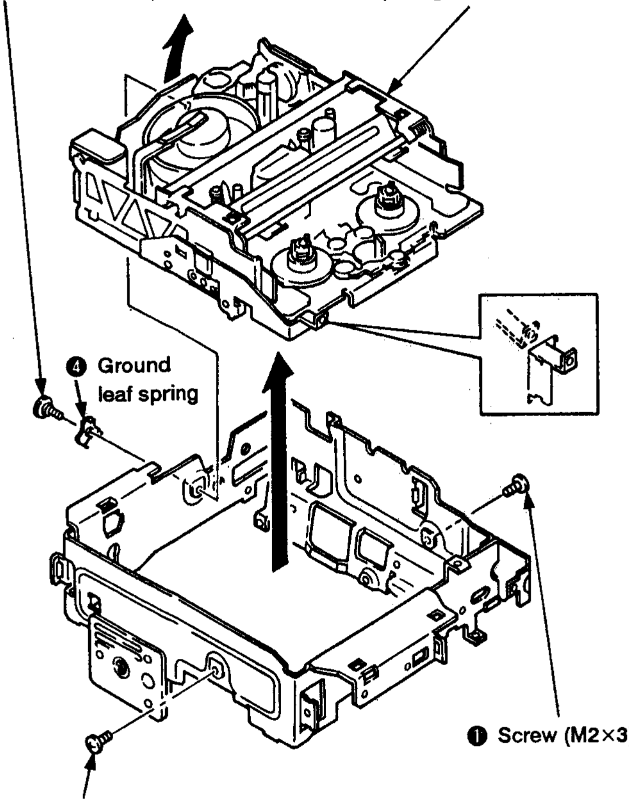

❶ Connector
CN607 2P
VS-63 board
❹ Open the VS-63 board
in the direction of arrow.
VS-63 board
❷ Two screws (M2×3)
❸ Remove the VS-63 board
in the direction of arrow.


❺ FP-316 flexible board
CN101
❽ VS-63 board
❻ FP-313 flexible board
CN601, CN501
❼ FP-314 flexible board
CN602

2-14. REMOVAL OF CC-52 BOARD


❶ Screw (BTP2×5)
❷ FP-89 flexible
board
CN211
❺ CC-52 board
❹ FPC connector
(translation) 10P
DRUM motor (M901)
❸ FP-90 flexible
board
CN212

2-15. REMOVAL OF MD BLOCK



❶ Screw (M2×3)

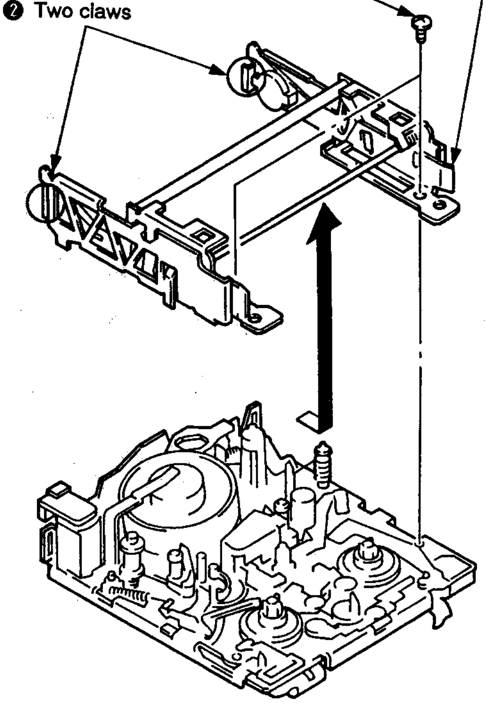
❷ Screw (M2×3)

❸ Step screw (frame)

❹ Ground leaf spring

❺ Lift the near side of the MD block and remove the part shown in the inset, pulling out of the frame.

2-16. REMOVAL OF CASSETTE COMPARTMENT ASSEMBLY

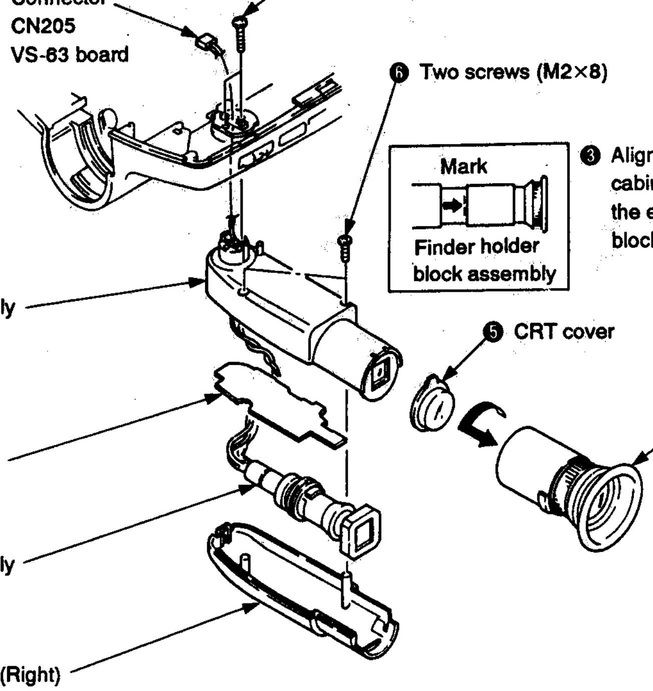


❶ Two screws (P2×3)

❷ Two claws

❸ Remove the cassette compartment assembly in the direction of arrow.

2-17. REMOVAL OF EVF ASSEMBLY



❶ Two screws (M2×10.5)

Connector CN205 VS-63 board

❷ EVF cabinet (Left) assembly (Pull out the connector through the square hall)

❸ Align the mark on the EVF cabinet (Left) assembly to the edge of the finder holder block assembly.

❹ Remove the finder holder block assembly in the direction of arrow.

❺ CRT cover

❻ Two screws (M2×8)

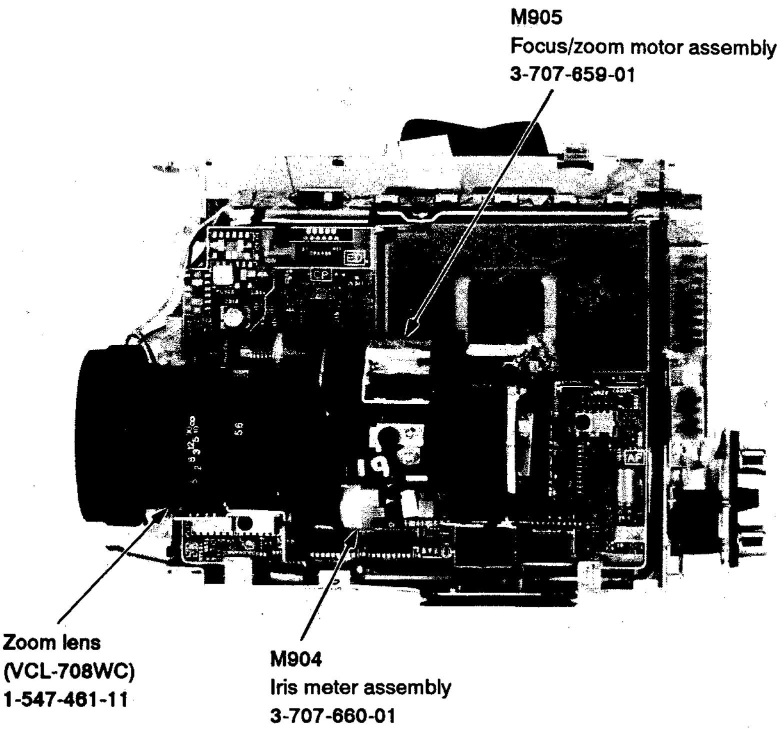
❼ EVF cabinet (Right)

❽ CRT assembly

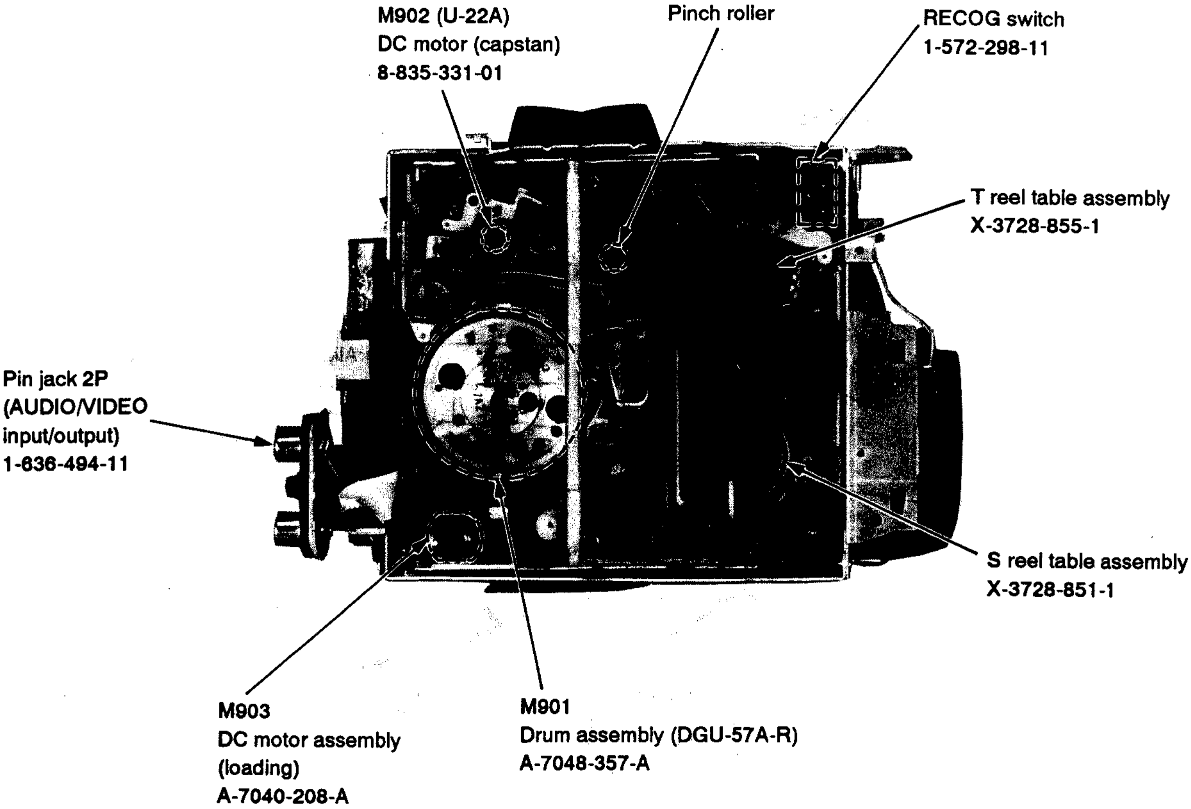
❾ VF-41 board

2-18. INTERNAL VIEW

– Right Side –

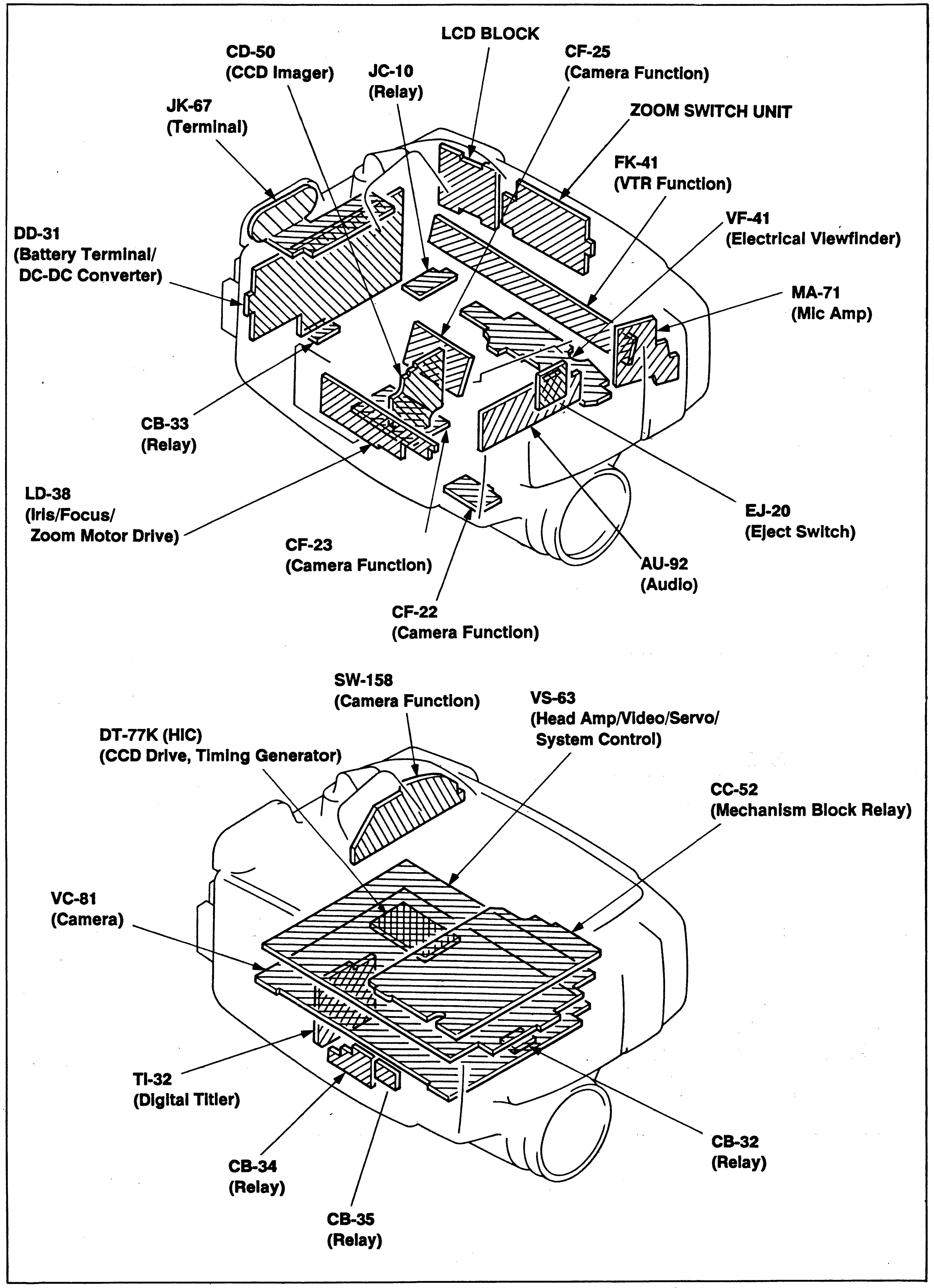

M905
Focus/zoom motor assembly
3-707-659-01
Zoom lens
(VCL-708WC)
1-547-461-11
M904
Iris meter assembly
3-707-660-01

– Left Side –

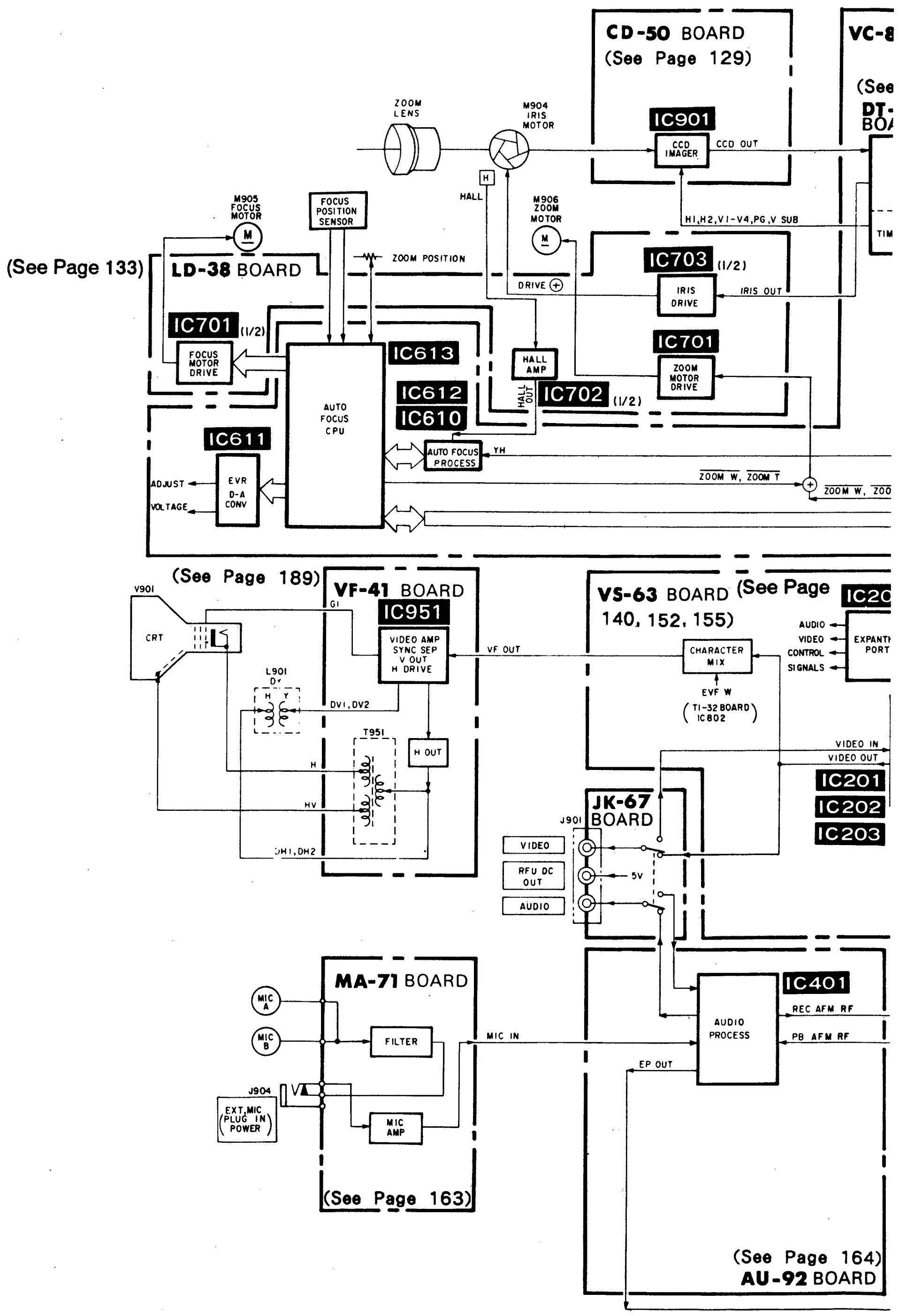

M902 (U-22A)
DC motor (capstan)
8-835-331-01
Pinch roller
RECOG switch
1-572-298-11
T reel table assembly
X-3728-855-1
Pin jack 2P
(AUDIO/VIDEO
input/output)
1-636-494-11
S reel table assembly
X-3728-851-1
M903
DC motor assembly
(loading)
A-7040-208-A
M901
Drum assembly (DGU-57A-R)
A-7048-357-A

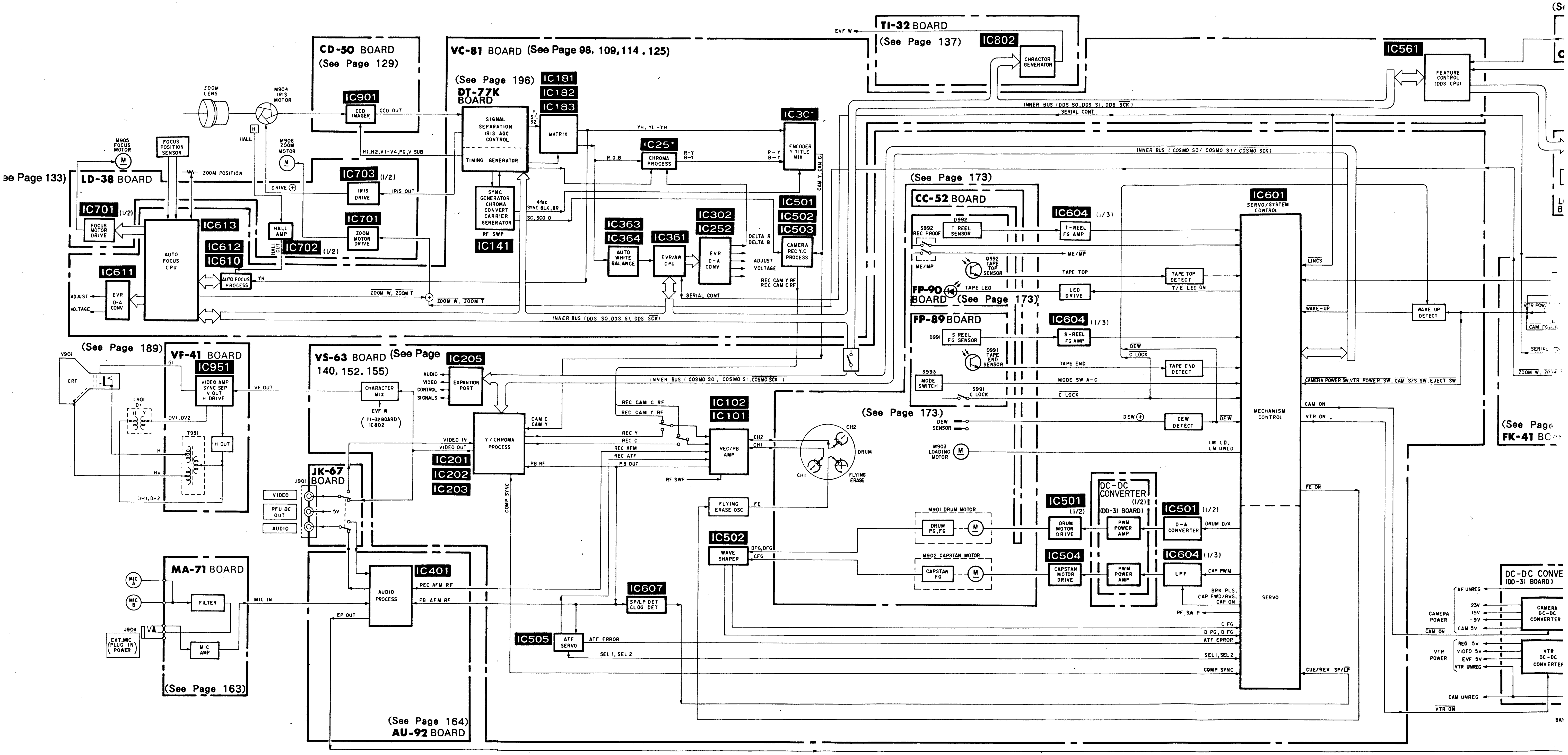
SECTION 3
DIAGRAMS

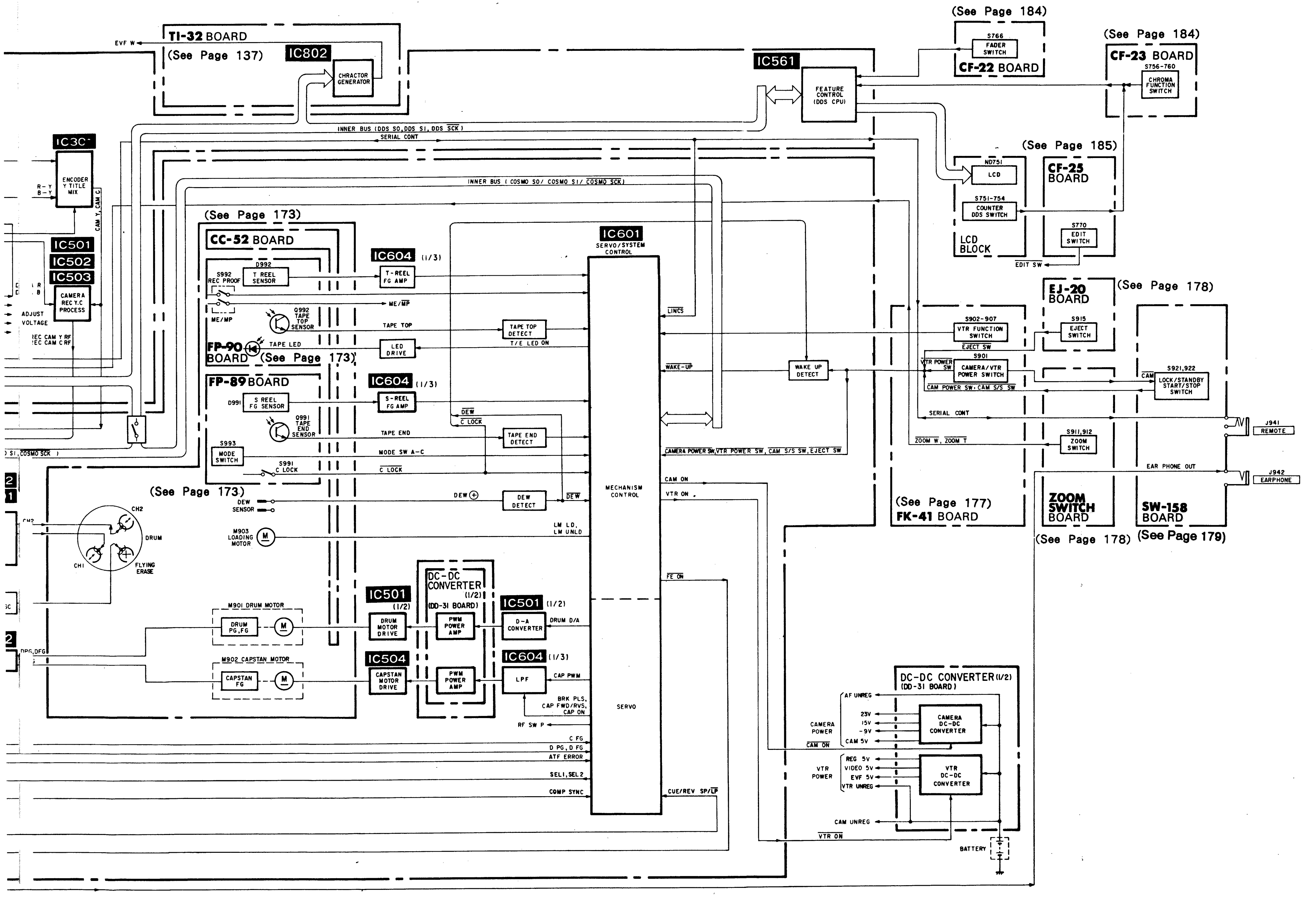
3-1. CIRCUIT BOARDS LOCATION


LCD BLOCK
CD-50 (CCD Imager)
JC-10 (Relay)
CF-25 (Camera Function)
JK-67 (Terminal)
ZOOM SWITCH UNIT
FK-41 (VTR Function)
VF-41 (Electrical Viewfinder)
DD-31 (Battery Terminal/ DC-DC Converter)
MA-71 (Mic Amp)
CB-33 (Relay)
LD-38 (Iris/Focus/ Zoom Motor Drive)
EJ-20 (Eject Switch)
CF-23 (Camera Function)
AU-92 (Audio)
CF-22 (Camera Function)
SW-158 (Camera Function)
VS-63 (Head Amp/Video/Servo/ System Control)
DT-77K (HIC) (CCD Drive, Timing Generator)
CC-52 (Mechanism Block Relay)
VC-81 (Camera)
TI-32 (Digital Titler)
CB-34 (Relay)
CB-32 (Relay)
CB-35 (Relay)

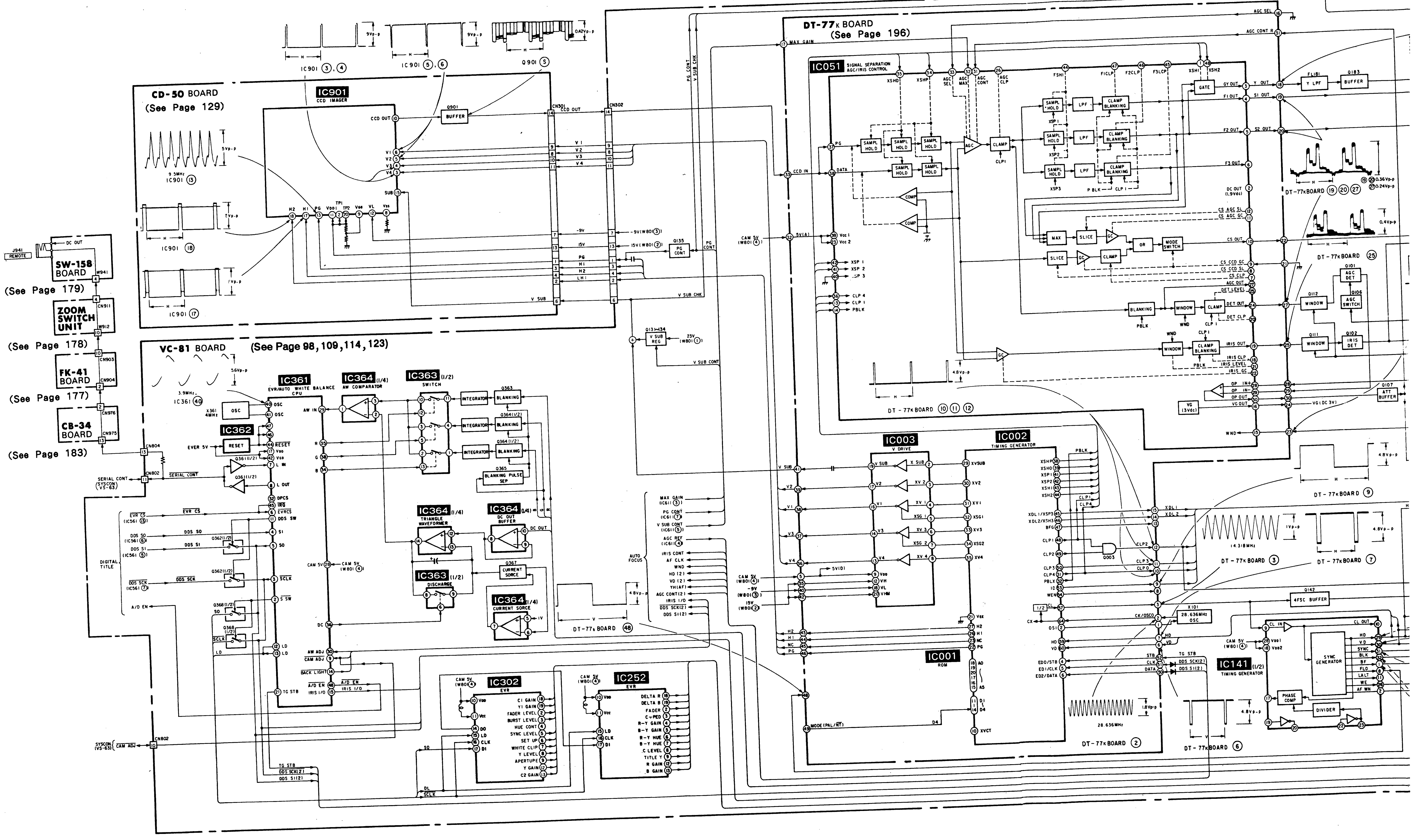
3-2. OVERALL BLOCK DIAGRAM

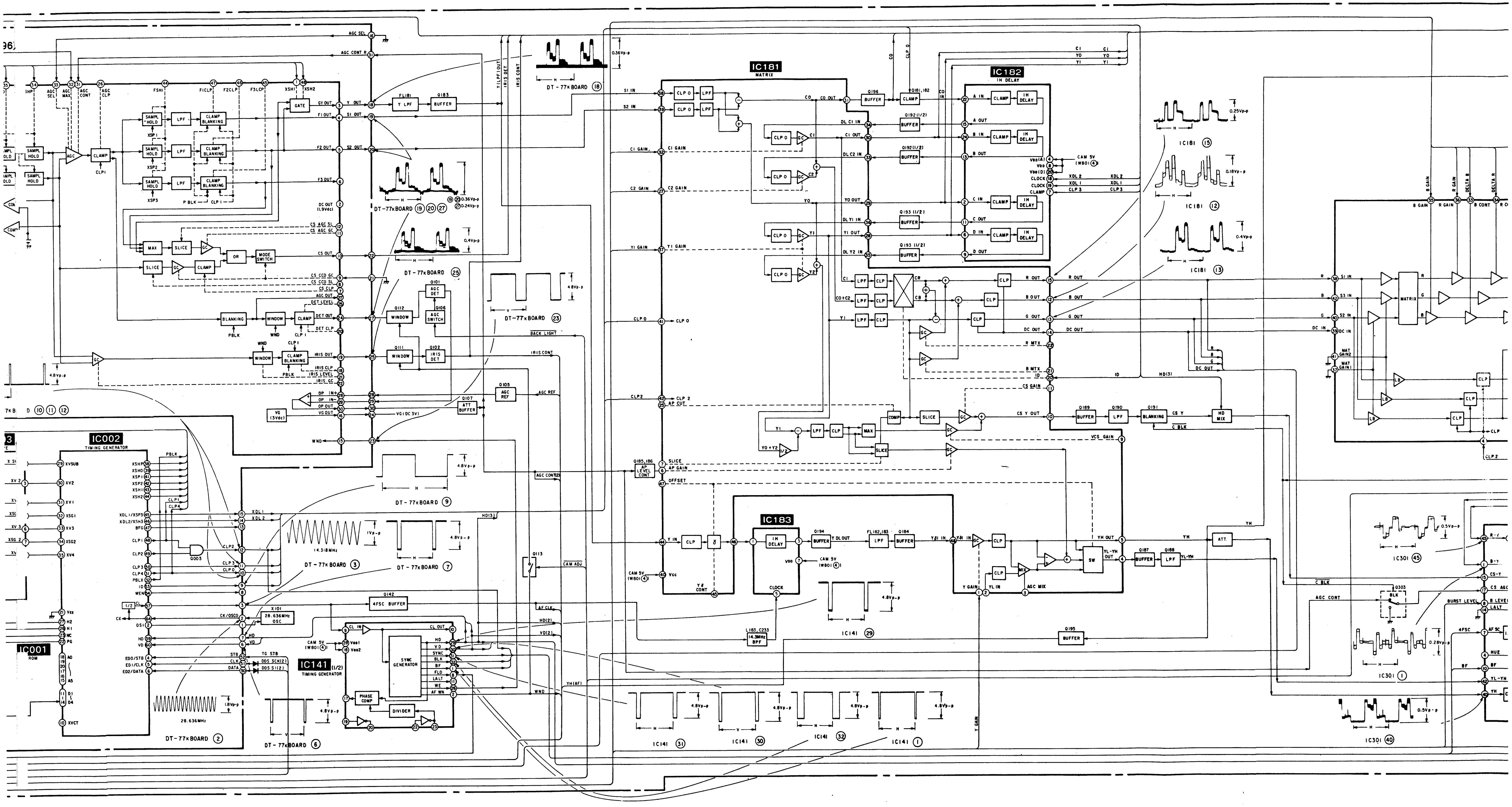

CD-50 BOARD
(See Page 129)
VC-8
(See
DT-
BO
ZOOM LENS
M904 IRIS MOTOR
IC901
CCD IMAGER
CCD OUT
H
HALL
M905 FOCUS MOTOR
FOCUS POSITION SENSOR
M906 ZOOM MOTOR
H1,H2,V1-V4,PG,V SUB
TIM
(See Page 133)
LD-38 BOARD
ZOOM POSITION
DRIVE
IC703 (1/2)
IRIS DRIVE
IRIS OUT
IC701 (1/2)
FOCUS MOTOR DRIVE
IC613
HALL AMP
IC701
ZOOM MOTOR DRIVE
IC612
IC610
HALL OUT
IC702 (1/2)
AUTO FOCUS CPU
IC611
AUTO FOCUS PROCESS
YH
ADJUST
VOLTAGE
EVR D-A CONV
ZOOM W, ZOOM T
ZOOM W, ZOO
(See Page 189)
V901
CRT
VF-41 BOARD
G1
IC951
VIDEO AMP SYNC SEP V OUT H DRIVE
VF OUT
L901 DY
H Y
DV1,DV2
T951
H OUT
H
HV
DH1,DH2
VS-63 BOARD (See Page 140, 152, 155)
IC20
AUDIO
VIDEO
CONTROL
SIGNALS
EXPANTI PORT
CHARACTER MIX
EVF W
(TI-32 BOARD IC802)
VIDEO IN
VIDEO OUT
IC201
IC202
IC203
JK-67 BOARD
J901
VIDEO
RFU DC OUT
AUDIO
5V
MA-71 BOARD
MIC A
MIC B
FILTER
MIC IN
J904
EXT MIC (PLUG IN POWER)
MIC AMP
(See Page 163)
IC401
AUDIO PROCESS
REC AFM RF
PB AFM RF
EP OUT
(See Page 164)
AU-92 BOARD

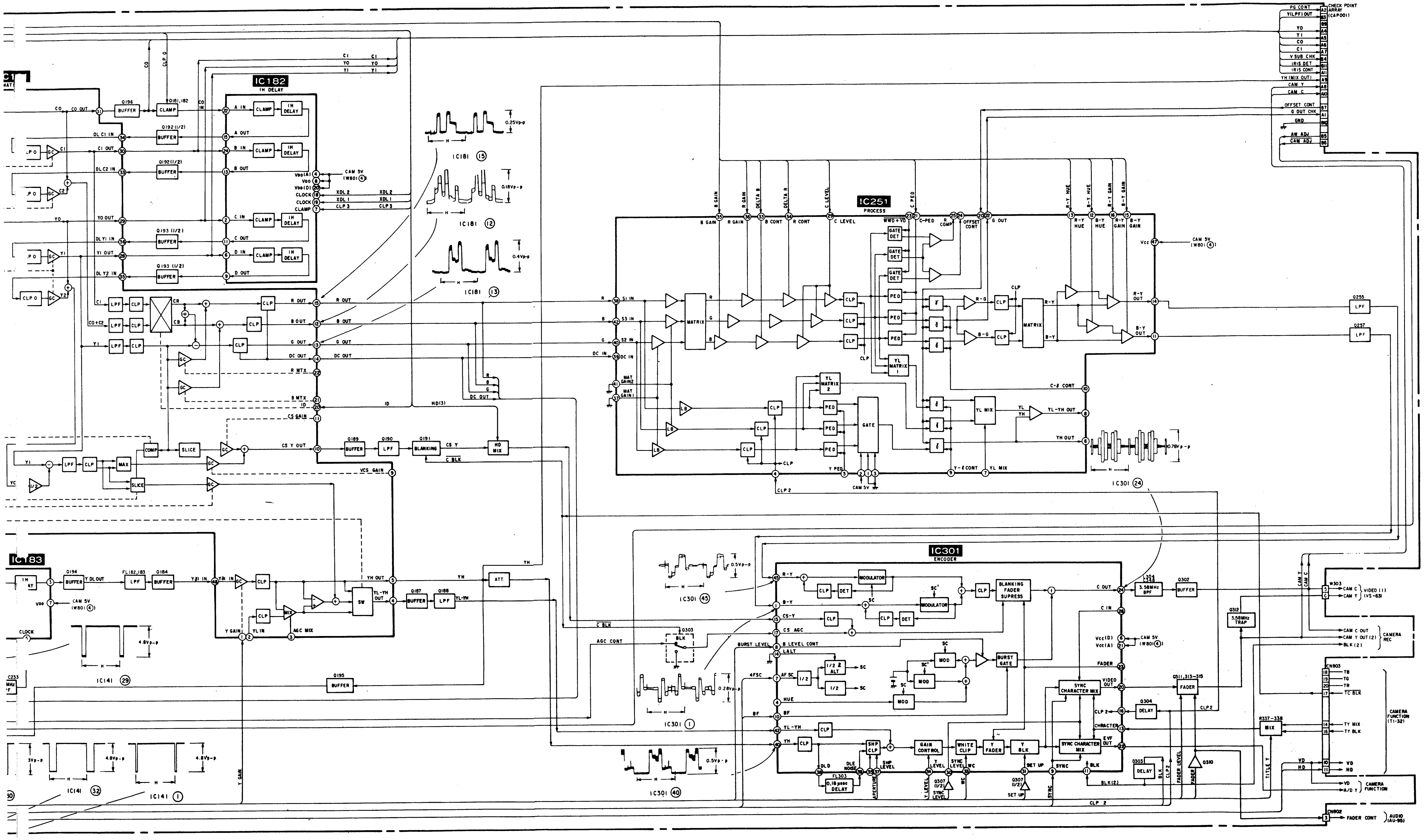

CD-50 BOARD (See Page 129)
VC-81 BOARD (See Page 98, 109, 114, 125)
TI-32 BOARD (See Page 137)
IC802
CHRACTOR GENERATOR
EVF W
IC561
FEATURE CONTROL (DDS CPU)
ZOOM LENS
M904 IRIS MOTOR
IC901
CCD IMAGER
CCD OUT
(See Page 196)
DT-77K BOARD
IC181
IC182
IC183
SIGNAL SEPARATION IRIS AGC CONTROL
TIMING GENERATOR
MATRIX
YH, YL-YH
IC301
ENCODER Y TITLE MIX
IC251
CHROMA PROCESS
R,G,B
R-Y B-Y
INNER BUS (DDS SO, DDS SI, DDS SCK)
SERIAL CONT
INNER BUS (COSMO SO/ COSMO SI/ COSMO SCK)
M905 FOCUS MOTOR
FOCUS POSITION SENSOR
HALL
M906 ZOOM MOTOR
ZOOM POSITION
See Page 133)
LD-38 BOARD
IC703 (1/2)
IRIS DRIVE
IRIS OUT
DRIVE
H1, H2, V1-V4, PG, V SUB
SYNC GENERATOR CHROMA CONVERT CARRIER GENERATOR
4fsc SYNC BLK, BR
SC, SCO 0
RF SWP
IC141
IC701 (1/2)
FOCUS MOTOR DRIVE
AUTO FOCUS CPU
IC613
IC612
IC610
HALL AMP
HALL OUT
IC702 (1/2)
IC701
ZOOM MOTOR DRIVE
IC611
EVR D-A CONV
ADJUST
VOLTAGE
AUTO FOCUS PROCESS
YH
ZOOM W, ZOOM T
IC363
IC364
AUTO WHITE BALANCE
IC361
EVR/AW CPU
IC302
IC252
EVR D-A CONV
DELTA R
DELTA B
ADJUST VOLTAGE
IC501
IC502
IC503
CAMERA REC Y.C PROCESS
REC CAM Y RF
REC CAM C RF
SERIAL CONT
CAM Y, CAM C
(See Page 173)
CC-52 BOARD
D992
S992 REC PROOF
T REEL SENSOR
ME/MP
Q992 TAPE TOP SENSOR
TAPE LED
FP-90 BOARD (See Page 173)
FP-89 BOARD
D991
S REEL FG SENSOR
Q991 TAPE END SENSOR
S993
MODE SWITCH
S991 C LOCK
IC604 (1/3)
T-REEL FG AMP
ME/MP
TAPE TOP
LED DRIVE
IC604 (1/3)
S-REEL FG AMP
TAPE END
MODE SW A-C
C LOCK
TAPE TOP DETECT
T/E LED ON
TAPE END DETECT
IC601
SERVO/SYSTEM CONTROL
LINCS
WAKE-UP
WAKE UP DETECT
DEW
C LOCK
CAMERA POWER SW, VTR POWER SW, CAM S/S SW, EJECT SW
MECHANISM CONTROL
CAM ON
VTR ON
DEW
DEW DETECT
LM LD, LM UNLD
(See Page 189)
V901
CRT
VF-41 BOARD
IC951
VIDEO AMP SYNC SEP V OUT H DRIVE
G1
L901
DV1, DV2
T951
H OUT
H
HV
DH1, DH2
VF OUT
VS-63 BOARD (See Page 140, 152, 155)
IC205
AUDIO
VIDEO
CONTROL
SIGNALS
EXPANTION PORT
CHARACTER MIX
EVF W
(TI-32 BOARD IC802)
INNER BUS (COSMO SO, COSMO SI, COSMO SCK)
REC CAM C RF
REC CAM Y RF
IC102
IC101
CAM C
CAM Y
Y/CHROMA PROCESS
VIDEO IN
VIDEO OUT
REC Y
REC C
REC AFM
REC ATF
PB OUT
PB RF
REC/PB AMP
CH2
CH1
RF SWP
IC201
IC202
IC203
(See Page 173)
DEW SENSOR
M903 LOADING MOTOR
DRUM
FLYING ERASE
JK-67 BOARD
J901
VIDEO
RFU DC OUT
AUDIO
5V
COMP SYNC
FLYING ERASE OSC
FE
IC502
WAVE SHAPER
DPG, DFG
CFG
M901 DRUM MOTOR
DRUM PG, FG
M902 CAPSTAN MOTOR
CAPSTAN FG
IC501 (1/2)
DRUM MOTOR DRIVE
IC504
CAPSTAN MOTOR DRIVE
DC-DC CONVERTER (1/2) (DD-31 BOARD)
PWM POWER AMP
PWM POWER AMP
IC501 (1/2)
D-A CONVERTER
DRUM D/A
IC604 (1/3)
LPF
CAP PWM
BRK PLS, CAP FWD/RVS, CAP ON
RF SW P
SERVO
FE ON
MA-71 BOARD
MIC A
MIC B
FILTER
MIC IN
J904
EXT.MIC (PLUG IN) POWER
MIC AMP
(See Page 163)
IC401
AUDIO PROCESS
REC AFM RF
PB AFM RF
EP OUT
IC607
SP/LP DET CLOG DET
IC505
ATF SERVO
ATF ERROR
SEL 1, SEL 2
C FG
D PG, D FG
ATF ERROR
SEL1, SEL2
COMP SYNC
CUE/REV SP/LP
(See Page 164)
AU-92 BOARD
(See Page
FK-41 BO
DC-DC CONVE
(DD-31 BOARD)
AF UNREG
CAMERA POWER
23V
15V
-9V
CAM 5V
CAM ON
CAMERA DC-DC CONVERTER
VTR POWER
REG 5V
VIDEO 5V
EVF 5V
VTR UNREG
VTR DC-DC CONVERTER
CAM UNREG
VTR ON
VTR POW
CAM FO
SERIAL
ZOOM W, ZO
BAT


TI-32 BOARD
(See Page 137)
IC802
CHRACTOR GENERATOR
EVF W
IC561
FEATURE CONTROL (DDS CPU)
INNER BUS (DDS SO, DDS SI, DDS SCK)
SERIAL CONT
INNER BUS (COSMO SO/ COSMO SI/ COSMO SCK)
IC3C
ENCODER Y TITLE MIX
R-Y
B-Y
CAM Y, CAM C
IC501
IC502
IC503
CAMERA REC Y.C PROCESS
ADJUST VOLTAGE
REC CAM Y RF
REC CAM C RF
SI, COSMO SCK
(See Page 173)
CC-52 BOARD
S992 REC PROOF
D992
T REEL SENSOR
IC604 (1/3)
T-REEL FG AMP
ME/MP
Q992 TAPE TOP SENSOR
TAPE TOP
TAPE TOP DETECT
T/E LED ON
FP-90 BOARD (See Page 173)
TAPE LED
LED DRIVE
FP-89 BOARD
D991
S REEL FG SENSOR
IC604 (1/3)
S-REEL FG AMP
Q991 TAPE END SENSOR
TAPE END
TAPE END DETECT
DEW
C LOCK
S993 MODE SWITCH
MODE SW A-C
S991 C LOCK
(See Page 173)
DEW SENSOR
DEW
DEW DETECT
M903 LOADING MOTOR
M
LM LD, LM UNLD
CH2
DRUM
CH1
FLYING ERASE
M901 DRUM MOTOR
DRUM PG,FG
M902 CAPSTAN MOTOR
CAPSTAN FG
DPG,DFG
IC501 (1/2)
DRUM MOTOR DRIVE
IC504
CAPSTAN MOTOR DRIVE
DC-DC CONVERTER (1/2) (DD-31 BOARD)
PWM POWER AMP
PWM POWER AMP
IC501 (1/2)
D-A CONVERTER
DRUM D/A
IC604 (1/3)
LPF
CAP PWM
BRK PLS, CAP FWD/RVS, CAP ON
RF SW P
C FG
D PG, D FG
ATF ERROR
SEL1, SEL2
COMP SYNC
IC601
SERVO/SYSTEM CONTROL
MECHANISM CONTROL
SERVO
LINCS
WAKE-UP
WAKE UP DETECT
CAMERA POWER SW, VTR POWER SW, CAM S/S SW, EJECT SW
CAM ON
VTR ON
FE ON
CUE/REV SP/LP
(See Page 184)
S766 FADER SWITCH
CF-22 BOARD
(See Page 184)
CF-23 BOARD
S756-760 CHROMA FUNCTION SWITCH
(See Page 185)
ND751 LCD
S751-754 COUNTER DDS SWITCH
LCD BLOCK
CF-25 BOARD
S770 EDIT SWITCH
EDIT SW
EJ-20 BOARD
(See Page 178)
S915 EJECT SWITCH
S902-907 VTR FUNCTION SWITCH
EJECT SW
S901 CAMERA/VTR POWER SWITCH
VTR POWER SW
CAM POWER SW, CAM S/S SW
CAM
S921,922 LOCK/STANDBY START/STOP SWITCH
SERIAL CONT
J941 REMOTE
ZOOM W, ZOOM T
S911,912 ZOOM SWITCH
EAR PHONE OUT
J942 EARPHONE
(See Page 177)
FK-41 BOARD
ZOOM SWITCH BOARD
(See Page 178)
SW-158 BOARD
(See Page 179)
DC-DC CONVERTER (1/2) (DD-31 BOARD)
AF UNREG
CAMERA POWER
23V
15V
-9V
CAM 5V
CAM ON
CAMERA DC-DC CONVERTER
VTR POWER
REG 5V
VIDEO 5V
EVF 5V
VTR UNREG
VTR DC-DC CONVERTER
CAM UNREG
VTR ON
BATTERY
2
1
2

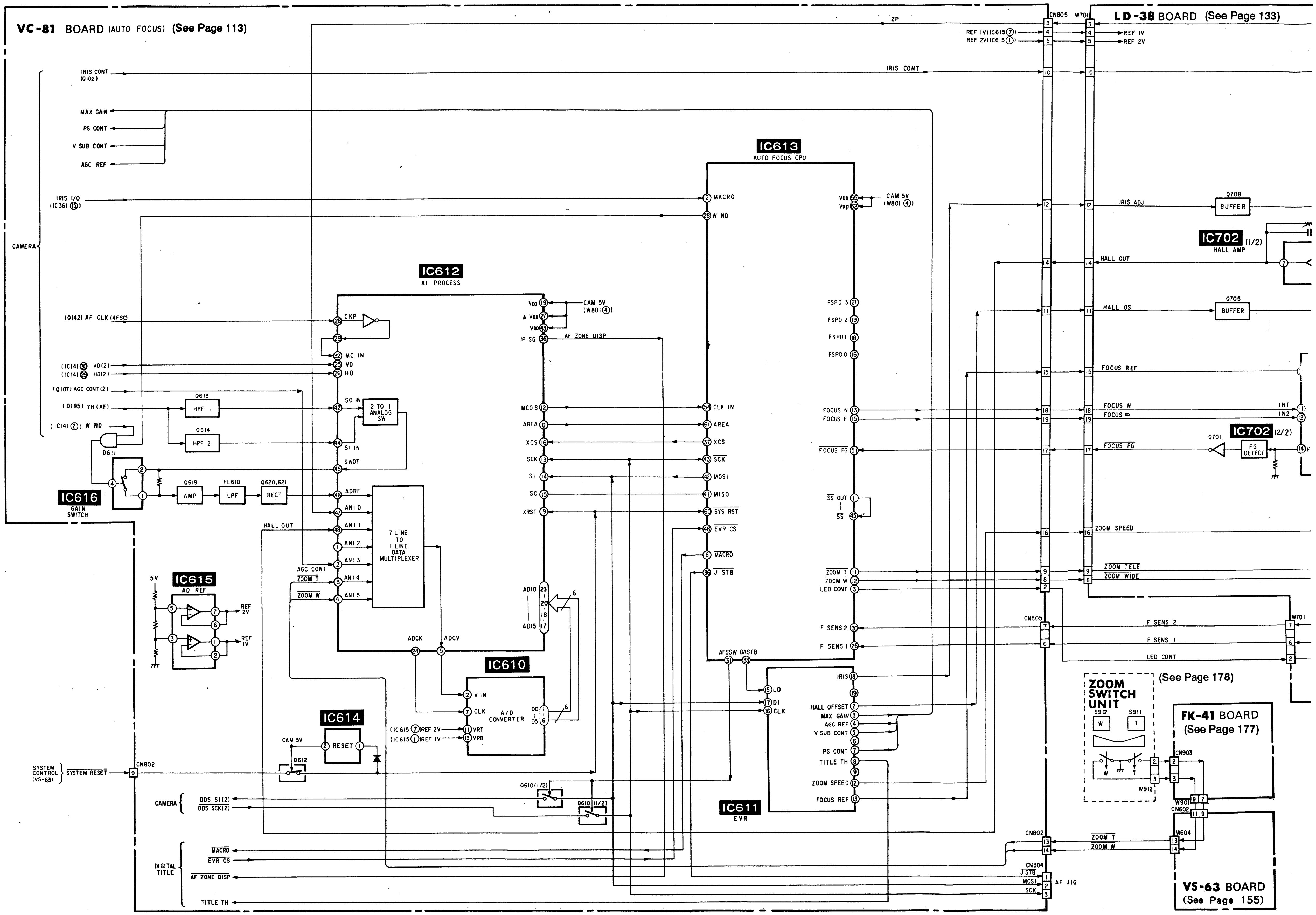
3-3. CAMERA BLOCK DIAGRAM


CD-50 BOARD
(See Page 129)
IC901 CCD IMAGER
Q901 BUFFER
IC901 ③,④
IC901 ⑤,⑥
Q901 ⑤
IC901 ⑬
IC901 ⑱
IC901 ⑰
Q135 PG CONT
Q131~134 V SUB REG
J941 REMOTE
SW-158 BOARD
(See Page 179)
ZOOM SWITCH UNIT
(See Page 178)
FK-41 BOARD
(See Page 177)
CB-34 BOARD
(See Page 183)
VC-81 BOARD
(See Page 98, 109, 114, 123)
IC361 EVR/AUTO WHITE BALANCE CPU
IC362 RESET
IC364 (1/4) AW COMPARATOR
IC363 (1/2) SWITCH
INTEGRATOR
BLANKING
Q365 BLANKING PULSE SEP
IC364 (1/4) TRIANGLE WAVEFORMER
IC364 (1/4) DC OUT BUFFER
IC363 (1/2) DISCHARGE
Q367 CURRENT SORCE
IC364 (1/4) CURRENT SORCE
IC302 EVR
IC252 EVR
SERIAL CONT (SYSCON) (VS-63)
DIGITAL TITLE
SYSCON (VS-63) CAM ADJ
AUTO FOCUS
DT-77K BOARD
(See Page 196)
IC051 SIGNAL SEPARATION AGC/IRIS CONTROL
SAMPL HOLD
AGC
CLAMP
LPF
CLAMP BLANKING
GATE
MAX
SLICE
OR
MODE SWITCH
BLANKING
WINDOW
F1181 Y LPF
Q183 BUFFER
Q101 AGC DET
Q112 WINDOW
Q106 AGC SWITCH
Q111 WINDOW
Q102 IRIS DET
Q107 ATT BUFFER
IC003 V DRIVE
IC002 TIMING GENERATOR
IC001 ROM
IC141 (1/2) TIMING GENERATOR
SYNC GENERATOR
PHASE COMP
DIVIDER
Q142 4FSC BUFFER
X101 28.636MHz OSC
DT-77K BOARD ⑲⑳㉗
DT-77K BOARD ㉕
DT-77K BOARD ⑩⑪⑫
DT-77K BOARD ⑨
DT-77K BOARD ③
DT-77K BOARD ⑦
DT-77K BOARD ②
DT-77K BOARD ⑥
DT-77K BOARD ㊽
14.318MHz
28.636MHz


IC002
TIMING GENERATOR
IC001
ROM
IC141 (1/2)
TIMING GENERATOR
IC181
MATRIX
IC182
1H DELAY
IC183
SAMPL HOLD
CLAMP BLANKING
AGC
CLAMP
GATE
MAX
SLICE
OR
MODE SWITCH
BLANKING
WINDOW
Y LPF
BUFFER
AGC DET
AGC SWITCH
IRIS DET
AGC REF
ATT BUFFER
4FSC BUFFER
28.636MHz OSC
SYNC GENERATOR
PHASE COMP
DIVIDER
CLP O
LPF
CLP
COMP
HD MIX
1H DELAY
CLOCK
SW
AGC LEVEL CONT
L183, C233 14.3MHz BPF
MATRIX
DT-77×BOARD ⑱
DT-77×BOARD ⑲ ⑳ ㉗
DT-77×BOARD ㉕
DT-77×BOARD ㉓
DT-77×BOARD ⑨
DT-77×BOARD ③
DT-77×BOARD ⑦
DT-77×BOARD ②
DT-77×BOARD ⑥
IC181 ⑮
IC181 ⑫
IC181 ⑬
IC141 ㉙
IC141 ㉛
IC141 ㉚
IC141 ㉜
IC141 ①
IC301 ㊺
IC301 ①
IC301 ㊵
14.318MHz
28.636MHz
0.36Vp-p
4.8Vp-p
0.4Vp-p
0.25Vp-p
0.18Vp-p
0.5Vp-p
1.8Vp-p
1Vp-p

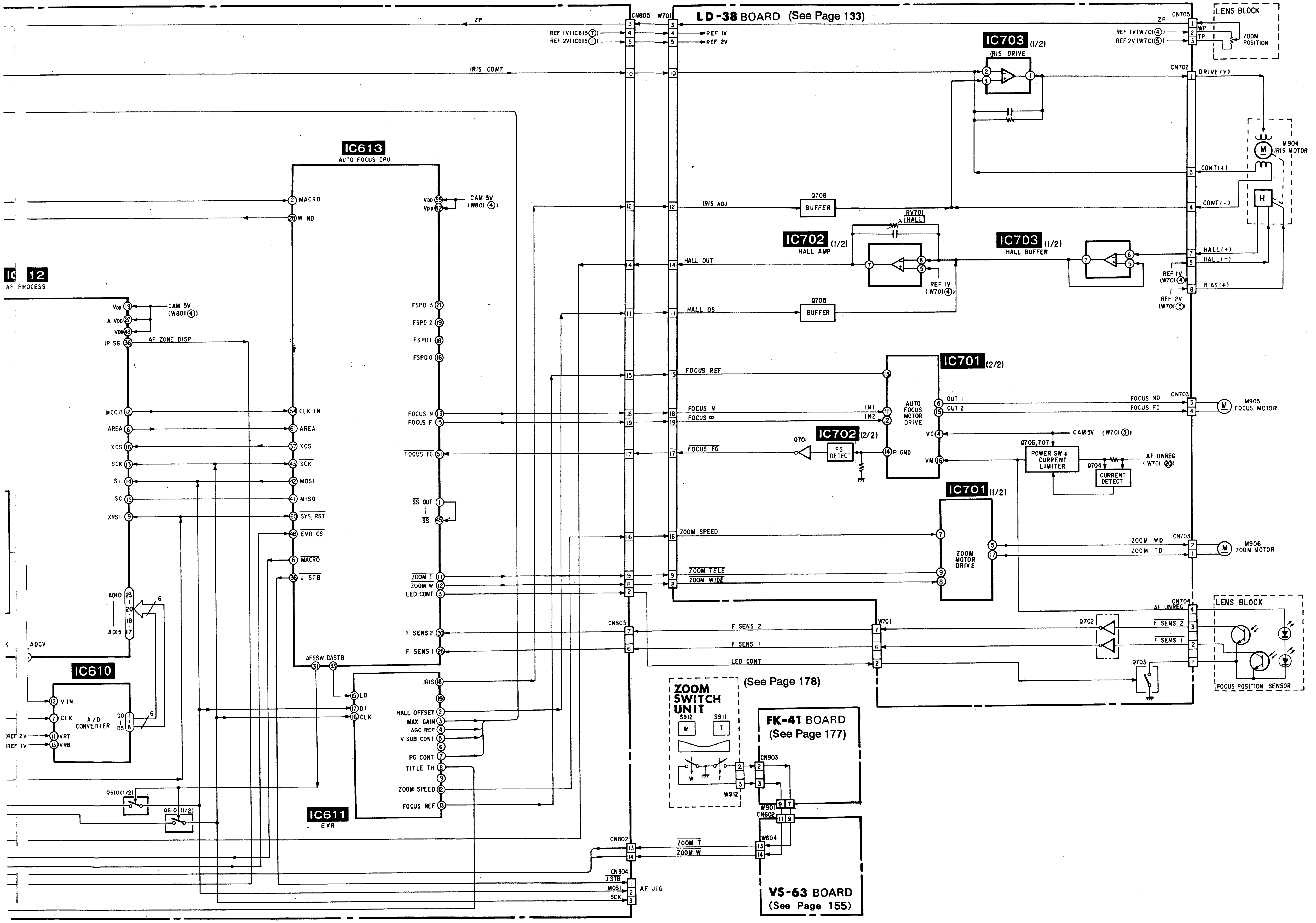

IC182
1H DELAY
CLAMP
1H DELAY
BUFFER
Q196
Q181,182
Q192 (1/2)
Q193 (1/2)
CO OUT
DLC1 IN
C1 OUT
DLC2 IN
YO OUT
DLY1 IN
Y1 OUT
DLY2 IN
A IN
A OUT
B IN
B OUT
C IN
C OUT
D IN
D OUT
CAM 5V
(W801) ④
XDL 2
XDL 1
CLP 3
C1
YO
Y1
LPF
CLP
R OUT
B OUT
G OUT
DC OUT
R MTX
B MTX
ID
CS GAIN
CS Y OUT
VCS GAIN
COMP
SLICE
MAX
GC
Q189
Q190
Q191
BUFFER
BLANKING
CS Y
C BLK
HD MIX
HD(3)
IC181 ⑮
0.25Vp-p
IC181 ⑫
0.18Vp-p
IC181 ⑬
0.4Vp-p
IC183
Q194
Y DL OUT
FL182,183
Q184
YH IN
Y GAIN
YL IN
AGC MIX
YH OUT
YL-YH OUT
SW
MIX
Q187
Q188
ATT
YH
YL-YH
IC141 ㉙
4.8Vp-p
IC141 ㉜
IC141 ①
Q195
CLOCK
IC251
PROCESS
B GAIN
R GAIN
DELTA B
DELTA R
C LEVEL
C PED
B CONT
R CONT
WWD+VD
R COMP
OFFSET CONT
G OUT
R-Y HUE
B-Y HUE
R-Y GAIN
B-Y GAIN
Vcc
CAM 5V (W801) ④
S1 IN
S3 IN
S2 IN
DC IN
MAT GAIN2
MAT GAIN1
MATRIX
GATE DET
PED
YL MATRIX 1
YL MATRIX 2
GATE
LB
YL MIX
R-G
B-G
R-Y
B-Y
R-Y OUT
B-Y OUT
C-γ CONT
YL-YH OUT
YH OUT
Y-γ CONT
Y PED
CLP 2
0.76Vp-p
IC301 ㉔
Q255
Q257
CHECK POINT ARRAY (CAP001)
PG CONT
Y(LPF) OUT
YO
Y1
CO
C1
V SUB CHK
IRIS DET
IRIS CONT
YH (MIX OUT)
CAM Y
CAM C
OFFSET CONT
G OUT CHK
GND
AW ADJ
CAM ADJ
IC301
ENCODER
MODULATOR
DET
BLANKING FADER SUPRESS
C OUT
C IN
L304 3.58MHz BPF
Q302
Q312 3.58MHz TRAP
CS-Y
CS AGC
B LEVEL CONT
LALT
AF SC
1/2
1/2 ALT
SC
MOD
BURST GATE
HUE
BF
FADER
SYNC CHARACTER MIX
VIDEO OUT
CLP 2
CHARACTER
EVF OUT
Q311,313-315
Q304
DELAY
Q303
BLK
AGC CONT
BURST LEVEL
4FSC
DLD
DLE NOISE
APERTURE
SHP CLP
SHP LEVEL
GAIN CONTROL
WHITE CLIP
Y FADER
Y BLK
Y LEVEL
SYNC LEVEL
WC
SET UP
SYNC
FL303 0.18μsec DELAY
Q307 (1/2)
Q310
BLK(2)
TITLE Y
R337-338
MIX
W303
CAM C
CAM Y
VIDEO (1) (VS-63)
CAM C OUT
CAM Y OUT (2)
BLK (2)
CAMERA REC
CN803
TB
TG
TR
TC BLK
TY MIX
TY BLK
CAMERA FUNCTION (TI-32)
VD
HD
A/D Y
CAMERA FUNCTION
CN802
FADER CONT
AUDIO (AU-95)
IC301 ㊺
0.5Vp-p
IC301 ①
0.28Vp-p
IC301 ㊵
0.5Vp-p

3-4. AUTO FOCUS BLOCK DIAGRAM



VC-81 BOARD (AUTO FOCUS) (See Page 113)
LD-38 BOARD (See Page 133)
CAMERA
IRIS CONT (Q102)
MAX GAIN
PG CONT
V SUB CONT
AGC REF
IRIS I/O (IC361 ⑮)
(Q142) AF CLK (4FSC)
(IC141 ㉚) VD(2)
(IC141 ㉙) HD(2)
(Q107) AGC CONT(2)
(Q195) YH (AF)
(IC141 ②) W ND
D611
IC616
GAIN SWITCH
Q613
HPF 1
Q614
HPF 2
Q619
AMP
FL610
LPF
Q620,621
RECT
IC612
AF PROCESS
CKP
MC IN
VD
HD
SO IN
SI IN
SWOT
ADRF
ANI 0
ANI 1
ANI 2
ANI 3
ANI 4
ANI 5
2 TO 1 ANALOG SW
7 LINE TO 1 LINE DATA MULTIPLEXER
VDD
A VDD
IP SG
CAM 5V (W801 ④)
AF ZONE DISP
MCO 8
AREA
XCS
SCK
SI
SC
XRST
ADIO
ADI5
ADCK
ADCV
HALL OUT
AGC CONT
ZOOM T
ZOOM W
IC615
AD REF
5V
REF 2V
REF 1V
IC610
V IN
CLK
A/D CONVERTER
DO
D5
(IC615 ⑦)REF 2V
(IC615 ①)REF 1V
VRT
VRB
IC614
RESET
CAM 5V
Q612
SYSTEM CONTROL (VS-63)
SYSTEM RESET
CN802
DDS SI(2)
DDS SCK(2)
Q610(1/2)
Q610(1/2)
DIGITAL TITLE
MACRO
EVR CS
AF ZONE DISP
TITLE TH
IC613
AUTO FOCUS CPU
MACRO
W ND
CLK IN
AREA
XCS
SCK
MOSI
MISO
SYS RST
EVR CS
MACRO
J STB
VDD
VPP
CAM 5V (W801 ④)
FSPD 3
FSPD 2
FSPD 1
FSPD 0
FOCUS N
FOCUS F
FOCUS FG
SS OUT
SS
ZOOM T
ZOOM W
LED CONT
F SENS 2
F SENS 1
AFSSW
DASTB
IC611
EVR
LD
DI
CLK
IRIS
HALL OFFSET
MAX GAIN
AGC REF
V SUB CONT
PG CONT
TITLE TH
ZOOM SPEED
FOCUS REF
ZP
REF 1V(IC615 ⑦)
REF 2V(IC615 ①)
IRIS CONT
CN805
W701
REF 1V
REF 2V
IRIS ADJ
Q708
BUFFER
IC702 (1/2)
HALL AMP
HALL OUT
HALL OS
Q705
BUFFER
FOCUS REF
FOCUS N
FOCUS ∞
IN1
IN2
Q701
IC702 (2/2)
FG DETECT
FOCUS FG
ZOOM SPEED
ZOOM TELE
ZOOM WIDE
F SENS 2
F SENS 1
LED CONT
ZOOM SWITCH UNIT
(See Page 178)
S912
S911
W
T
W912
FK-41 BOARD
(See Page 177)
CN903
W901
CN602
W604
ZOOM T
ZOOM W
CN304
J STB
MOSI
SCK
AF JIG
VS-63 BOARD
(See Page 155)

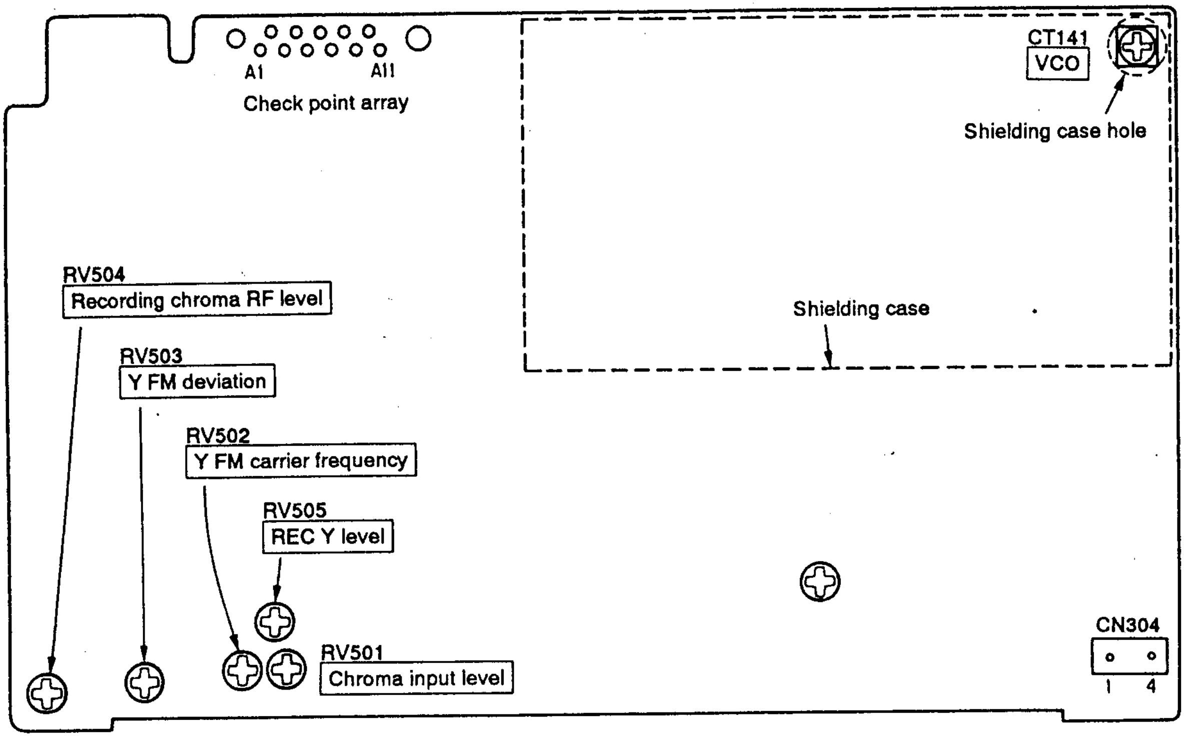
09


LD-38 BOARD (See Page 133)
LENS BLOCK
ZOOM POSITION
IC703 (1/2) IRIS DRIVE
IC613 AUTO FOCUS CPU
12 AF PROCESS
IC702 (1/2) HALL AMP
IC703 (1/2) HALL BUFFER
Q708 BUFFER
Q705 BUFFER
RV701 HALL
IC701 (2/2) AUTO FOCUS MOTOR DRIVE
IC702 (2/2) FG DETECT
Q701
IC701 (1/2) ZOOM MOTOR DRIVE
M904 IRIS MOTOR
M905 FOCUS MOTOR
M906 ZOOM MOTOR
Q706,707 POWER SW & CURRENT LIMITER
Q704 CURRENT DETECT
LENS BLOCK
FOCUS POSITION SENSOR
Q702
Q703
IC610 A/D CONVERTER
IC611 EVR
Q610 (1/2)
ZOOM SWITCH UNIT
(See Page 178)
S912 S911
W T
W912
FK-41 BOARD (See Page 177)
VS-63 BOARD (See Page 155)
CN805 W701 CN705 CN702 CN703 CN704 CN802 CN304 CN903 W901 CN602 W604
AF JIG
ZP
REF 1V (IC615 ⑦)
REF 2V (IC615 ①)
REF 1V (W701 ④)
REF 2V (W701 ⑤)
IRIS CONT
IRIS ADJ
HALL OUT
HALL OS
FOCUS REF
FOCUS N
FOCUS ∞
FOCUS FG
ZOOM SPEED
ZOOM TELE
ZOOM WIDE
ZOOM T
ZOOM W
F SENS 2
F SENS 1
LED CONT
DRIVE (+)
CONT (+)
CONT (-)
HALL (+)
HALL (-)
BIAS (+)
FOCUS ND
FOCUS FD
ZOOM WD
ZOOM TD
AF UNREG
CAM 5V (W701 ③)
AF UNREG (W701 ⑳)
CAM 5V (W801 ④)
MACRO
W ND
CLK IN
AREA
XCS
SCK
MOSI
MISO
SYS RST
EVR CS
MACRO
J STB
FSPD 3
FSPD 2
FSPD 1
FSPD 0
SS OUT
SS
ZOOM T
ZOOM W
LED CONT
AFSSW DASTB
IRIS
LD
DI
CLK
HALL OFFSET
MAX GAIN
AGC REF
V SUB CONT
PG CONT
TITLE TH
ZOOM SPEED
FOCUS REF
AF ZONE DISP
MCO8
AREA
XCS
SCK
SI
SO
XRST
AD10
AD15
ADCV
V IN
CLK
VRT
VRB
REF 2V
REF 1V
IN1 IN2
OUT 1
OUT 2
P GND
VC
VM
J STB
MOSI
SCK

5. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

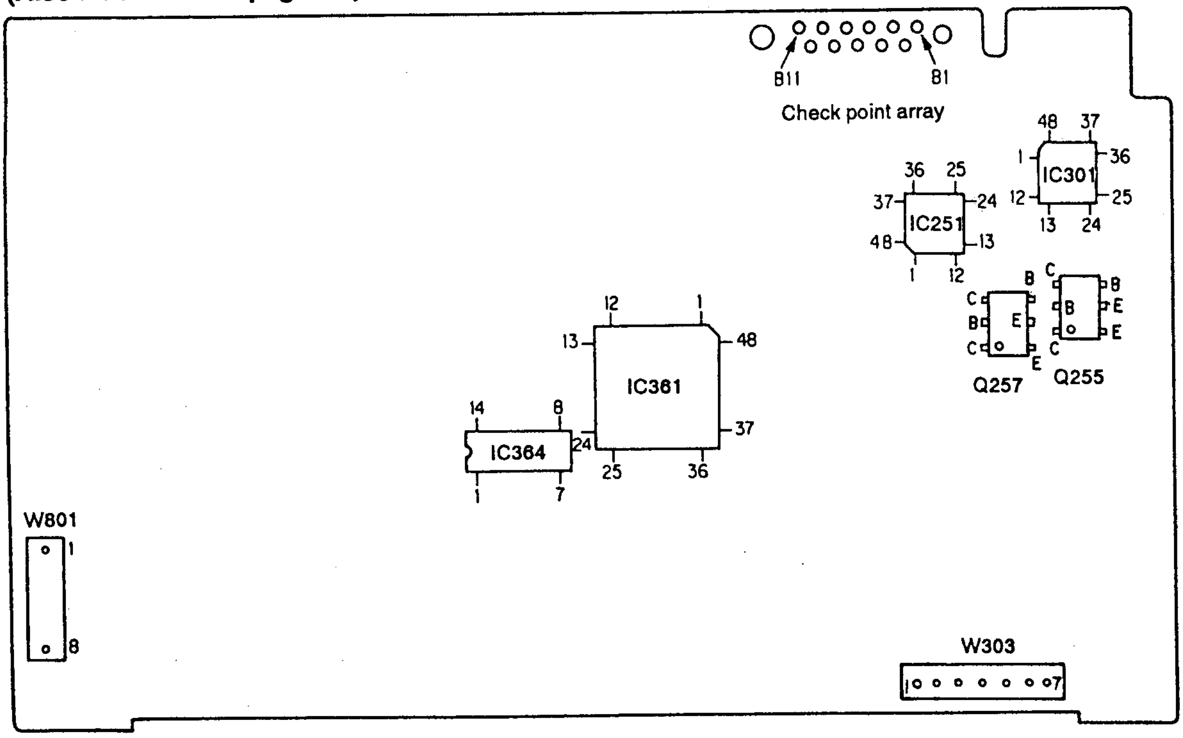
C-81 BOARD (COMPONENT SIDE)

(Also illustrated on page 61.)


A1
A11
Check point array
CT141
VCO
Shielding case hole
Shielding case
RV504
Recording chroma RF level
RV503
Y FM deviation
RV502
Y FM carrier frequency
RV505
REC Y level
RV501
Chroma input level
CN304
1
4

VC-81 BOARD (CONDUCTOR SIDE)

(Also illustrated on page 61.)

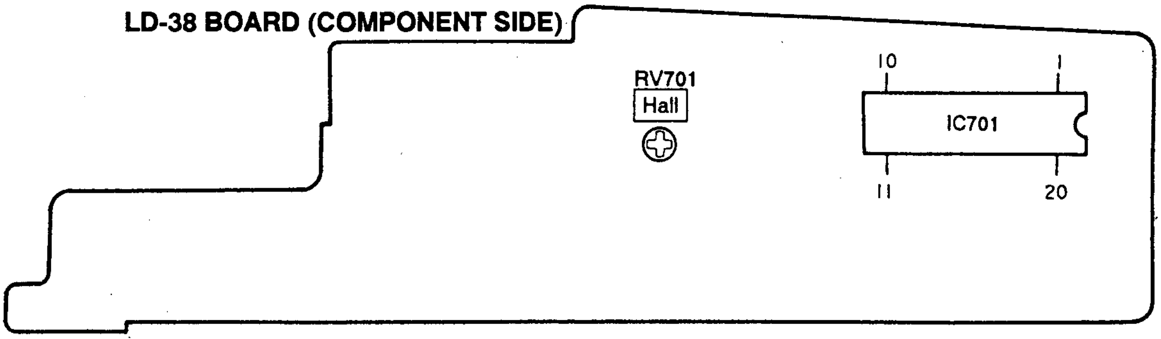

B11
B1
Check point array
48 37
1
36
IC301
12
25
13 24
36 25
37
24
IC251
48
13
1 12
B C
C B E
B E E
C C
E
Q257
Q255
12 1
13
48
IC361
37
14 8
IC364
24
25 36
1 7
W801
1
8
W303
1
7

VF

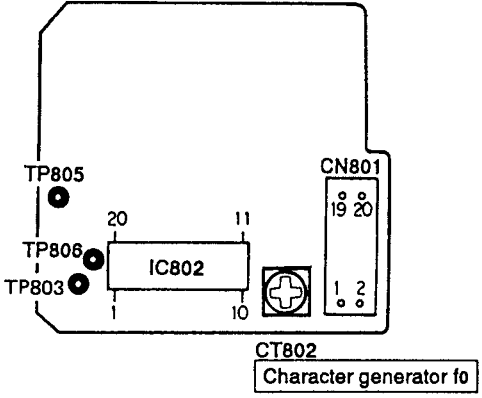
(C

—39

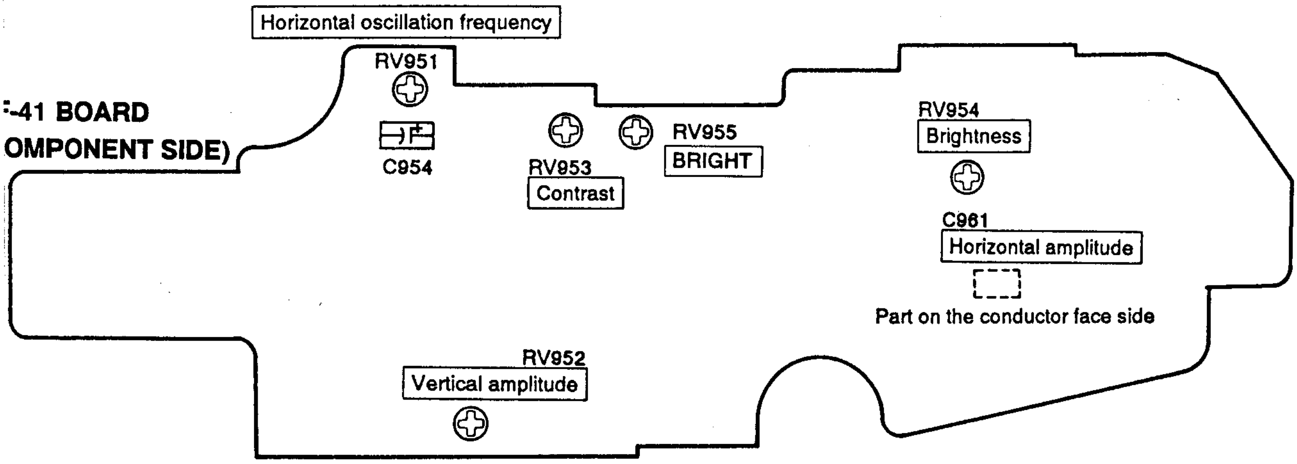
LD-38 BOARD (COMPONENT SIDE)


RV701
Hall
10
1
IC701
11
20

TI-32 BOARD (COMPONENT SIDE)

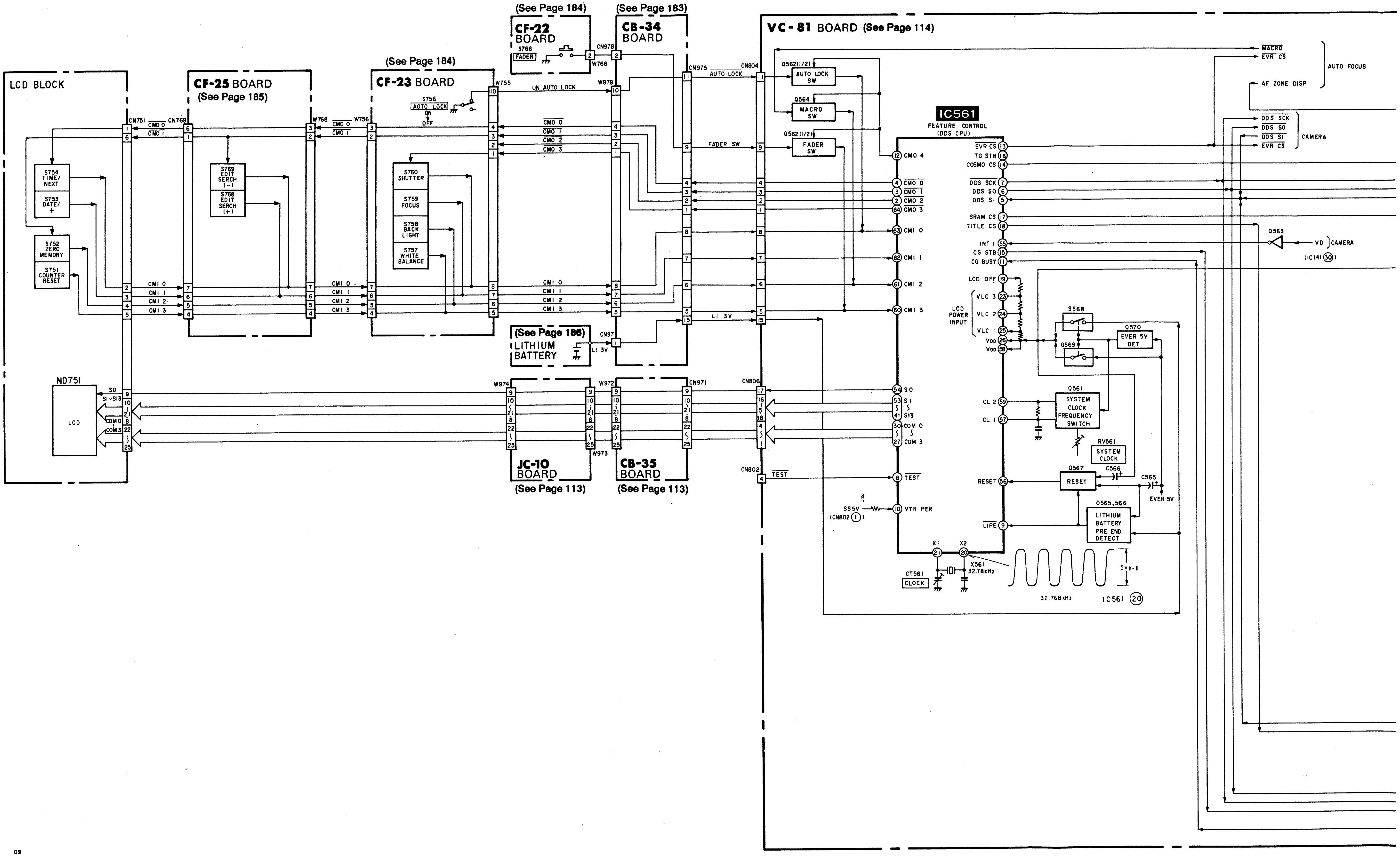

TP805
CN801
19 20
20
11
TP806
IC802
TP803
1
10
1 2
CT802
Character generator f0

:-41 BOARD
OMPONENT SIDE)

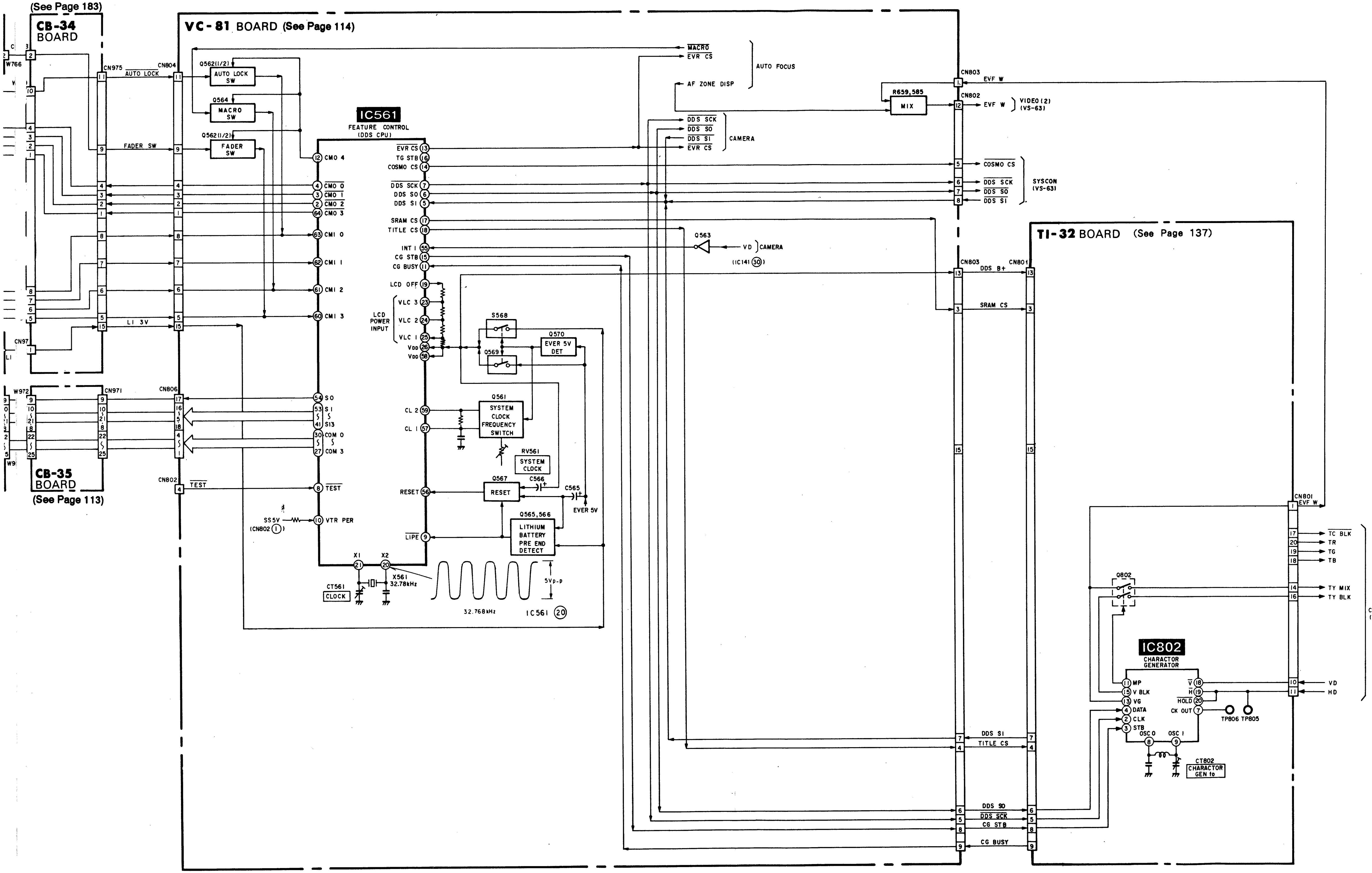

Horizontal oscillation frequency
RV951
C954
RV953
Contrast
RV955
BRIGHT
RV954
Brightness
C961
Horizontal amplitude
Part on the conductor face side
RV952
Vertical amplitude

42 - 44.

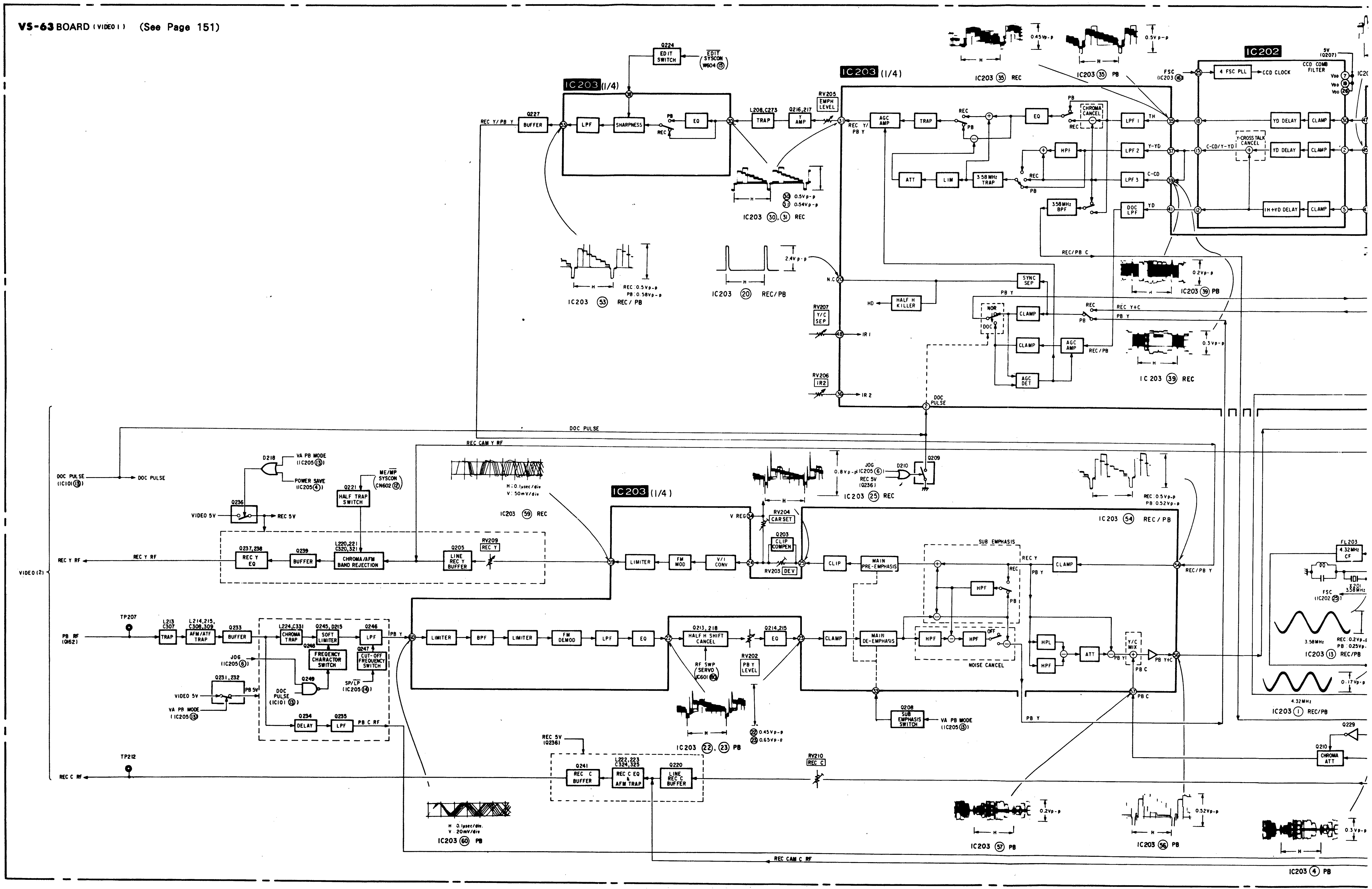
3-5. CAMERA FUNCTION BLOCK DIAGRAM



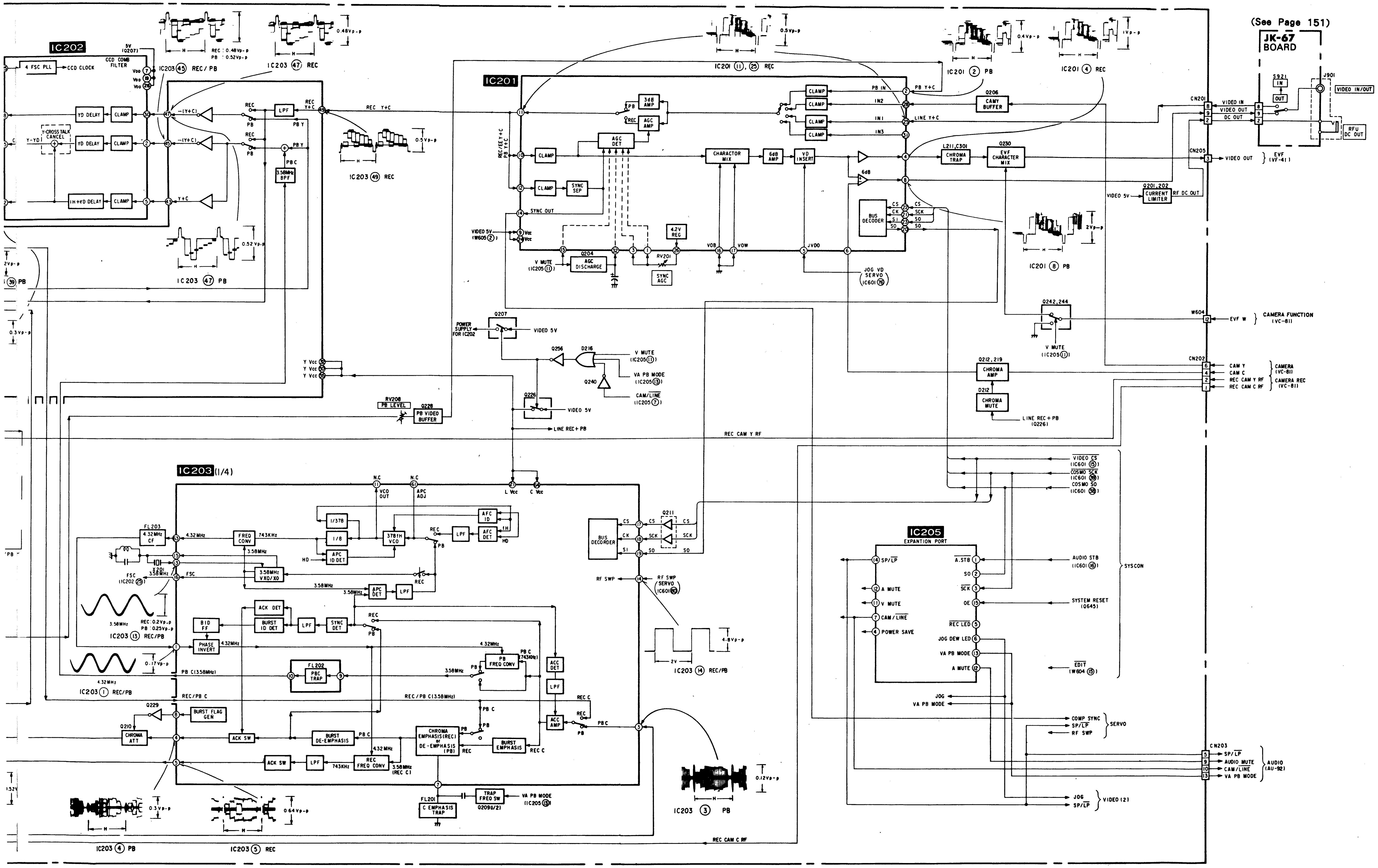
LCD BLOCK
CF-25 BOARD (See Page 185)
CF-23 BOARD (See Page 184)
CF-22 BOARD (See Page 184)
CB-34 BOARD (See Page 183)
VC-81 BOARD (See Page 114)
S754 TIME/NEXT
S753 DATE/+
S752 ZERO MEMORY
S751 COUNTER RESET
S769 EDIT SERCH (−)
S768 EDIT SERCH (+)
S760 SHUTTER
S759 FOCUS
S758 BACK LIGHT
S757 WHITE BALANCE
S756 AUTO LOCK ON OFF
S766 FADER
CN751
CN769
W768
W756
W755
W979
CN978
W766
CN975
CN804
UN AUTO LOCK
AUTO LOCK
FADER SW
CMO 0
CMO 1
CMO 2
CMO 3
CMI 0
CMI 1
CMI 2
CMI 3
LI 3V
(See Page 186) LITHIUM BATTERY
CN97
ND751
LCD
SO
SI~SI3
COM0
COM3
W974
W972
W973
CN971
CN806
CN802
JC-10 BOARD (See Page 113)
CB-35 BOARD (See Page 113)
Q562(1/2) AUTO LOCK SW
Q564 MACRO SW
Q562(1/2) FADER SW
IC561 FEATURE CONTROL (DDS CPU)
CMO 4
EVR CS
TG STB
COSMO CS
DDS SCK
DDS SO
DDS SI
SRAM CS
TITLE CS
INT 1
CG STB
CG BUSY
LCD OFF
LCD POWER INPUT
VLC 3
VLC 2
VLC 1
VDD
CL 2
CL 1
RESET
LIPE
TEST
SS5V (CN802 ①)
VTR PER
X1
X2
CT561 CLOCK
X561 32.78kHz
32.768kHz
5Vp-p
IC561 ⑳
S568
Q569
Q570 EVER 5V DET
Q561 SYSTEM CLOCK FREQUENCY SWITCH
RV561 SYSTEM CLOCK
Q567 RESET
C566
C565
EVER 5V
Q565,566 LITHIUM BATTERY PRE END DETECT
MACRO
AF ZONE DISP
AUTO FOCUS
CAMERA
Q563
VD
IC141 ㉚


(See Page 183)
CB-34 BOARD
VC-81 BOARD (See Page 114)
IC561
FEATURE CONTROL (DDS CPU)
CN975
CN804
AUTO LOCK
FADER SW
LI 3V
CN97
W766
W972
CN971
CN806
CN802
TEST
CB-35 BOARD
(See Page 113)
Q562(1/2)
AUTO LOCK SW
Q564
MACRO SW
Q562(1/2)
FADER SW
CMO 4
CMO 0
CMO 1
CMO 2
CMO 3
CMI 0
CMI 1
CMI 2
CMI 3
S0
S1
S13
COM 0
COM 3
TEST
VTR PER
SS5V
(CN802 ①)
EVR CS
TG STB
COSMO CS
DDS SCK
DDS SO
DDS SI
SRAM CS
TITLE CS
INT 1
CG STB
CG BUSY
LCD OFF
LCD POWER INPUT
VLC 3
VLC 2
VLC 1
VDD
VDD
CL 2
CL 1
RESET
LIPE
X1
X2
S568
Q570
EVER 5V DET
Q569
Q561
SYSTEM CLOCK FREQUENCY SWITCH
RV561
SYSTEM CLOCK
Q567
RESET
C566
C565
EVER 5V
Q565,566
LITHIUM BATTERY PRE END DETECT
CT561
CLOCK
X561
32.78kHz
5Vp-p
32.768kHz
IC561 ⑳
MACRO
EVR CS
AUTO FOCUS
AF ZONE DISP
DDS SCK
DDS SO
DDS SI
EVR CS
CAMERA
Q563
VD
CAMERA
(IC141 ㉚)
R659,585
MIX
CN803
EVF W
CN802
EVF W
VIDEO(2) (VS-63)
COSMO CS
DDS SCK
DDS SO
DDS SI
SYSCON (VS-63)
TI-32 BOARD (See Page 137)
CN803
CN801
DDS B+
SRAM CS
DDS SI
TITLE CS
DDS SO
DDS SCK
CG STB
CG BUSY
CN801
EVF W
TC BLK
TR
TG
TB
Q802
TY MIX
TY BLK
CAMERA (VC-81)
VD
HD
IC802
CHARACTOR GENERATOR
MP
V BLK
VG
DATA
CLK
STB
OSC O
OSC I
V
H
HOLD
CK OUT
TP806
TP805
CT802
CHARACTOR GEN fo

3-6. VIDEO (1) BLOCK DIAGRAM

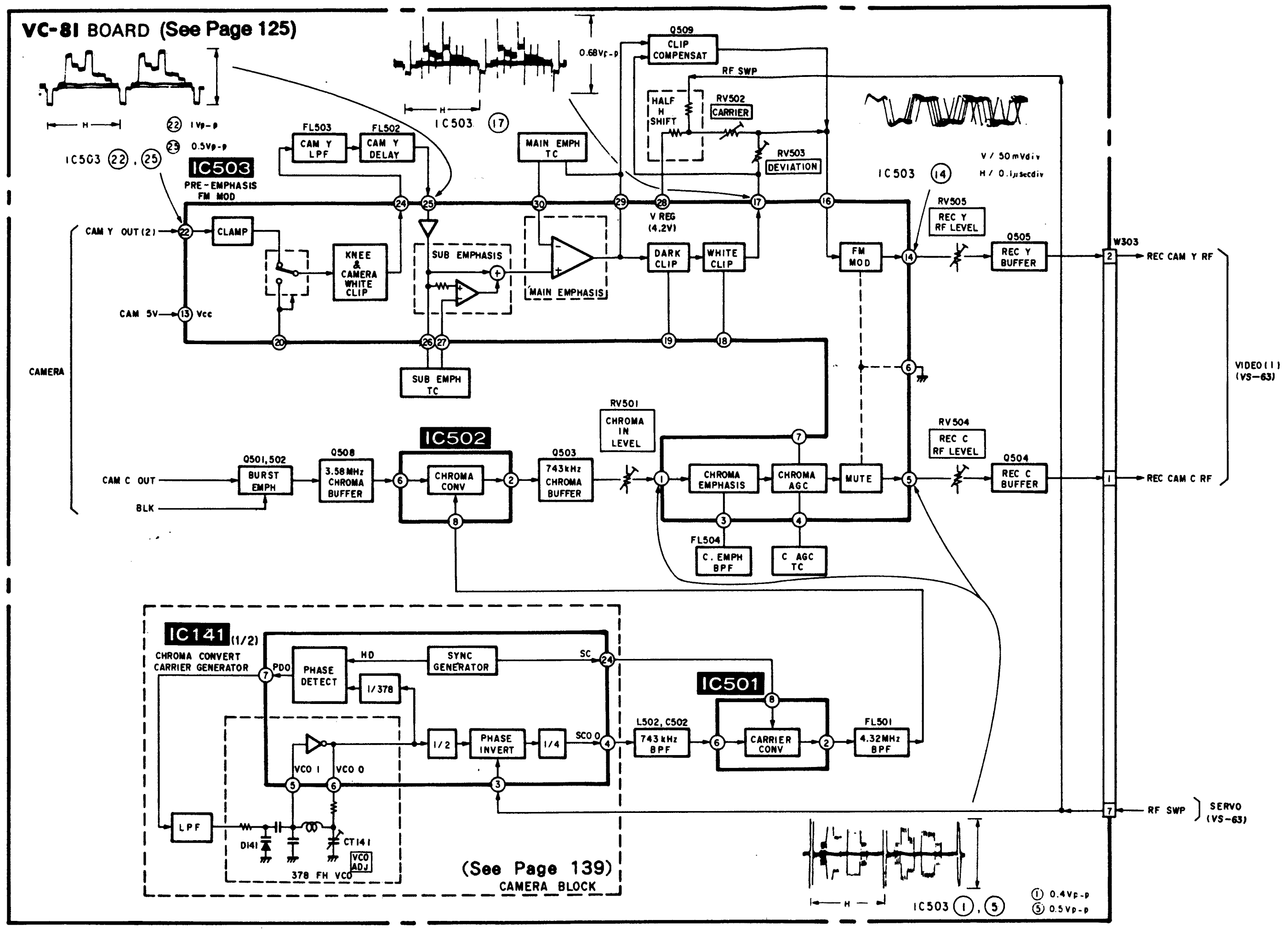

VS-63 BOARD (VIDEO 1) (See Page 151)
IC203 (1/4)
IC202
Q224 EDIT SWITCH
EDIT SYSCON (W604 ⑮)
Q227 BUFFER
REC Y/PB Y
LPF
SHARPNESS
EQ
L208,C273 TRAP
Q216,217 Y AMP
RV205 EMPH LEVEL
AGC AMP
TRAP
CHROMA CANCEL
LPF 1
LPF 2
LPF 3
DOC LPF
ATT
LIM
3.58MHz TRAP
3.58MHz BPF
HPF
4 FSC PLL
CCD CLOCK
CCD COMB FILTER
YD DELAY
CLAMP
Y-CROSS TALK CANCEL
1H+YD DELAY
SYNC SEP
HALF H KILLER
NOR
DOC
AGC DET
RV207 Y/C SEP
RV206 IR2
DOC PULSE
REC CAM Y RF
IC203 ㉚, ㉛ REC
IC203 ⑳ REC/PB
IC203 ㊾ REC
IC203 ㉝ REC/PB
IC203 ㉟ REC
IC203 ㉟ PB
IC203 ㊴ PB
IC203 ㊴ REC
DOC PULSE (IC101 ⑬)
D218
VA PB MODE (IC205 ⑬)
POWER SAVE (IC205 ④)
Q236
VIDEO 5V
REC 5V
Q221 HALF TRAP SWITCH
ME/MP SYSCON (CN602 ⑫)
Q237,238 REC Y EQ
Q239 BUFFER
L220,221 C320,321 CHROMA/AFM BAND REJECTION
Q205 LINE REC Y BUFFER
RV209 REC Y
REC Y RF
VIDEO (2)
LIMITER
FM MOD
V/I CONV
RV204 CAR SET
Q203 CLIP COMPEN
RV203 DEV
CLIP
MAIN PRE-EMPHASIS
SUB EMPHASIS
JOG (IC205 ⑥)
REC 5V (Q236)
D210
Q209
IC203 ㉕ REC
IC203 ㊹ REC/PB
IC203 ㊼ REC
PB RF (Q162)
TP207
L213 C307 TRAP
L214,215, C308,309 AFM/ATF TRAP
Q233 BUFFER
L224,C331 CHROMA TRAP
Q245,Q215 SOFT LIMITER
Q246 LPF
Q248 FREQUENCY CHARACTOR SWITCH
Q247 CUT-OFF FREQUENCY SWITCH
SP/LP (IC205 ⑭)
Q231,232
VA PB MODE (IC205 ⑬)
DOC PULSE (IC101 ⑬)
Q249
Q234 DELAY
Q235 LPF
PB C RF
BPF
FM DEMOD
Q213,218 HALF H SHIFT CANCEL
Q214,215 EQ
RF SWP (SERVO IC601 ㉖)
RV202 PB Y LEVEL
MAIN DE-EMPHASIS
NOISE CANCEL
Q208 SUB EMPHASIS SWITCH
VA PB MODE (IC205 ⑬)
Y/C MIX
IC203 ㉒, ㉓ PB
IC203 ㊿ PB
TP212
REC C RF
Q241 REC C BUFFER
L222,223 C324,325 REC C EQ & AFM TRAP
Q220 LINE REC C BUFFER
RV210 REC C
REC CAM C RF
FL203 4.32MHz CF
Q229
Q210 CHROMA ATT
IC203 ⑬ REC/PB
IC203 ① REC/PB
IC203 ㊲ PB
IC203 ㊱ PB
IC203 ④ PB

09



IC202
4 FSC PLL
CCD CLOCK
CCD COMB FILTER
YD DELAY
CLAMP
Y-CROSS TALK CANCEL
1H+YD DELAY
IC203 ㊺ REC/PB
IC203 ㊼ REC
IC203 ㊾ REC
IC203 ㊼ PB
LPF
3.58MHz BPF
IC201
3dB AMP
AGC AMP
AGC DET
SYNC SEP
AGC DISCHARGE
CHARACTOR MIX
6dB AMP
VD INSERT
BUS DECODER
4.2V REG
SYNC AGC
CLAMP
CAMY BUFFER
CHROMA TRAP
EVF CHARACTER MIX
CURRENT LIMITER
IC201 ⑪, ㉕ REC
IC201 ② PB
IC201 ④ REC
IC201 ⑧ PB
(See Page 151)
JK-67 BOARD
VIDEO IN/OUT
RFU DC OUT
VIDEO OUT EVF (VF-41)
CAMERA FUNCTION (VC-81)
CAMERA (VC-81)
CAMERA REC (VC-81)
POWER SUPPLY FOR IC202
PB LEVEL
PB VIDEO BUFFER
CHROMA AMP
CHROMA MUTE
LINE REC+PB (Q226)
REC CAM Y RF
IC203 (1/4)
FREQ CONV
1/378
1/8
APC ID DET
378fH VCO
AFC ID
AFC DET
3.58MHz VXO/XO
APC DET
ACK DET
BURST ID DET
SYNC DET
BID FF
PHASE INVERT
PBC TRAP
PB FREQ CONV
ACC DET
ACC AMP
BURST FLAG GEN
CHROMA ATT
ACK SW
BURST DE-EMPHASIS
CHROMA EMPHASIS(REC) or DE-EMPHASIS (PB)
BURST EMPHASIS
REC FREQ CONV
TRAP FREQ SW
C EMPHASIS TRAP
BUS DECORDER
IC203 ⑬ REC/PB
IC203 ① REC/PB
IC203 ⑭ REC/PB
IC203 ③ PB
IC203 ④ PB
IC203 ⑤ REC
IC205
EXPANTION PORT
AUDIO STB (IC601 ⑯)
SYSTEM RESET (Q645)
EDIT (W604 ⑤)
SYSCON
COMP SYNC
SP/LP
RF SWP
SERVO
AUDIO MUTE
CAM/LINE
VA PB MODE
AUDIO (AU-92)
JOG
VIDEO (2)
REC CAM C RF

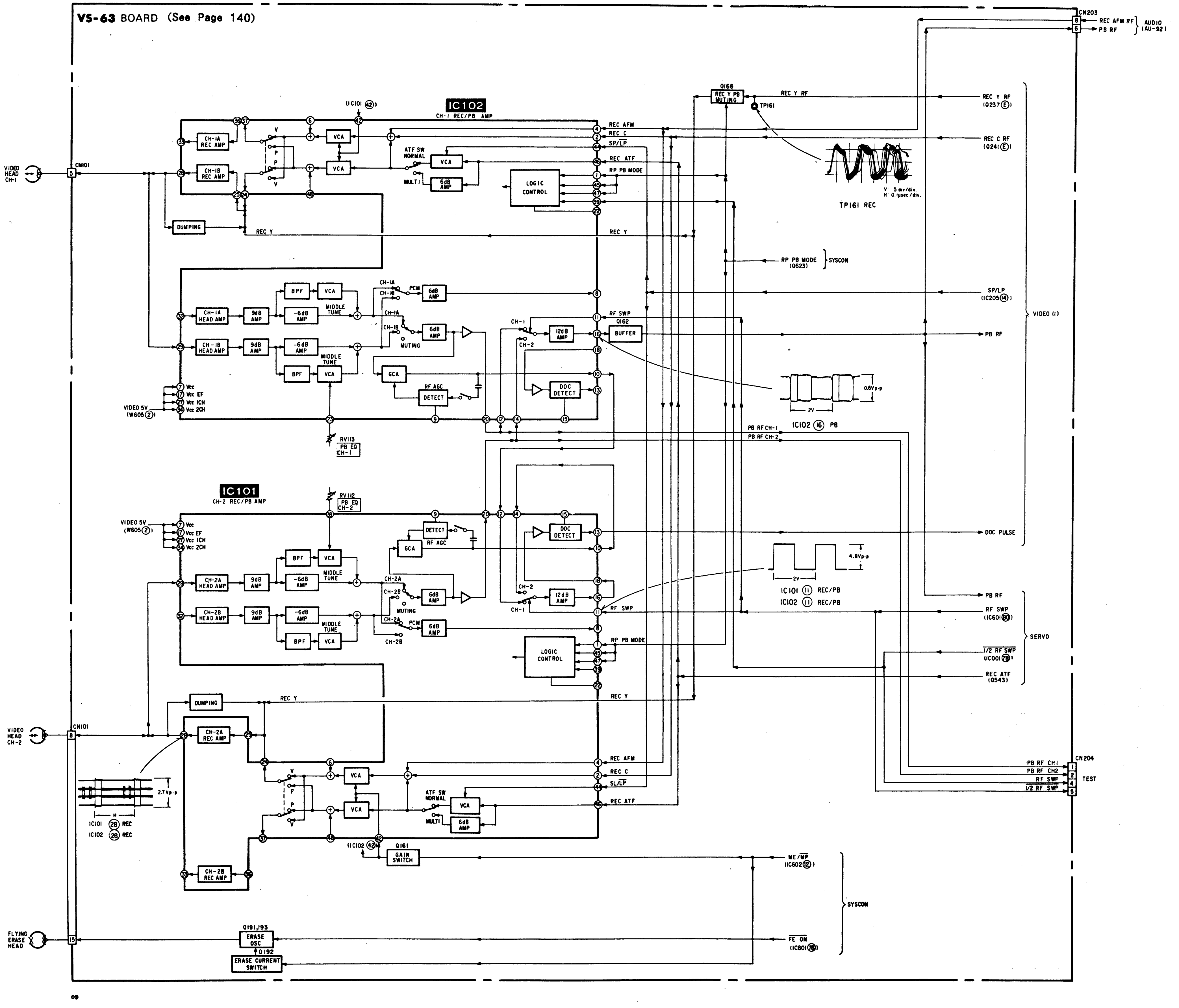
3-7. CAMERA REC BLOCK DIAGRAM


VC-81 BOARD (See Page 125)
H
㉒ 1Vp-p
㉕ 0.5Vp-p
IC503 ㉒, ㉕
IC503
PRE-EMPHASIS
FM MOD
FL503
CAM Y LPF
FL502
CAM Y DELAY
H
IC503 ⑰
0.68Vp-p
MAIN EMPH TC
Q509
CLIP COMPENSAT
RF SWP
HALF H SHIFT
RV502
CARRIER
RV503
DEVIATION
IC503 ⑭
V / 50mVdiv
H / 0.1μsecdiv
CAM Y OUT(2)
CLAMP
KNEE & CAMERA WHITE CLIP
SUB EMPHASIS
MAIN EMPHASIS
V REG (4.2V)
DARK CLIP
WHITE CLIP
FM MOD
RV505
REC Y RF LEVEL
Q505
REC Y BUFFER
W303
REC CAM Y RF
CAM 5V
Vcc
SUB EMPH TC
CAMERA
VIDEO(1) (VS-63)
RV501
CHROMA IN LEVEL
IC502
CAM C OUT
BLK
Q501,502
BURST EMPH
Q508
3.58MHz CHROMA BUFFER
CHROMA CONV
Q503
743kHz CHROMA BUFFER
CHROMA EMPHASIS
CHROMA AGC
MUTE
RV504
REC C RF LEVEL
Q504
REC C BUFFER
REC CAM C RF
FL504
C. EMPH BPF
C AGC TC
IC141 (1/2)
CHROMA CONVERT CARRIER GENERATOR
PDO
PHASE DETECT
HD
SYNC GENERATOR
SC
1/378
1/2
PHASE INVERT
1/4
SCO O
VCO I
VCO O
LPF
D141
CT141
VCO ADJ
378 FH VCO
(See Page 139)
CAMERA BLOCK
IC501
L502, C502
743kHz BPF
CARRIER CONV
FL501
4.32MHz BPF
RF SWP
SERVO (VS-63)
H
IC503 ①, ⑤
① 0.4Vp-p
⑤ 0.5Vp-p

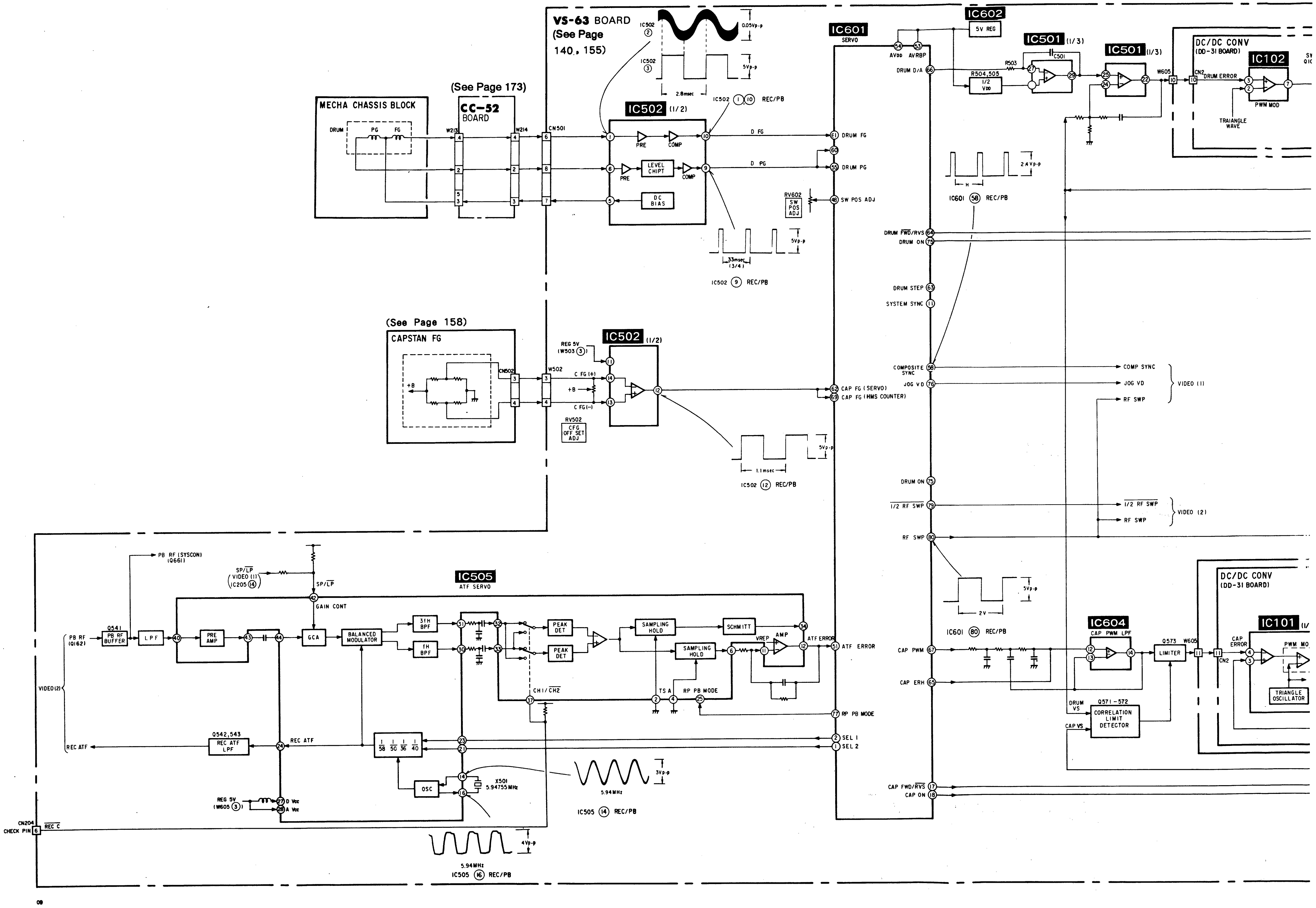
3-8. VIDE

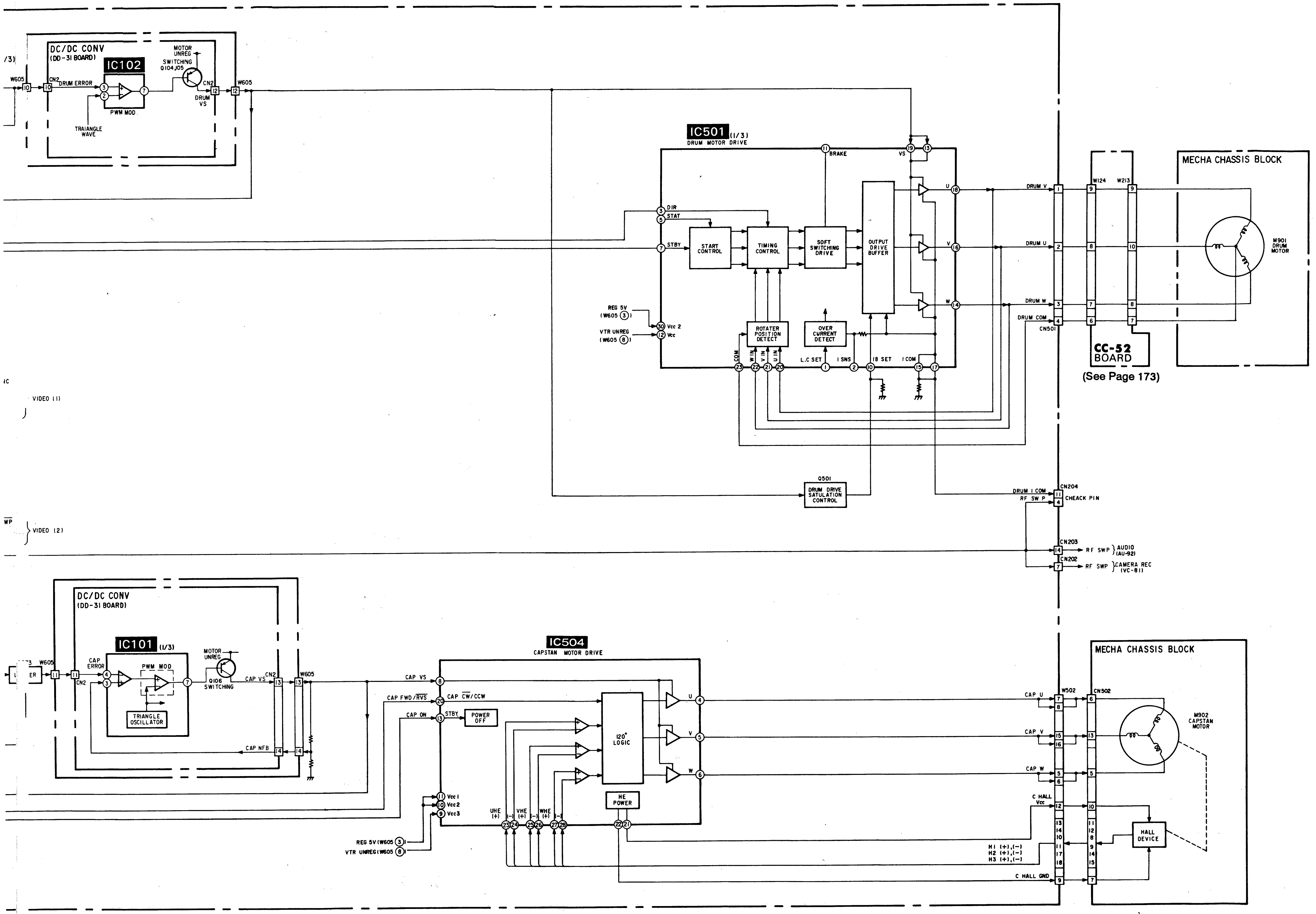
VIDEO HEAD CH-1
VIDEO HEAD CH-2
FLYING ERASE HEAD

3-8. VIDEO (2) BLOCK DIAGRAM

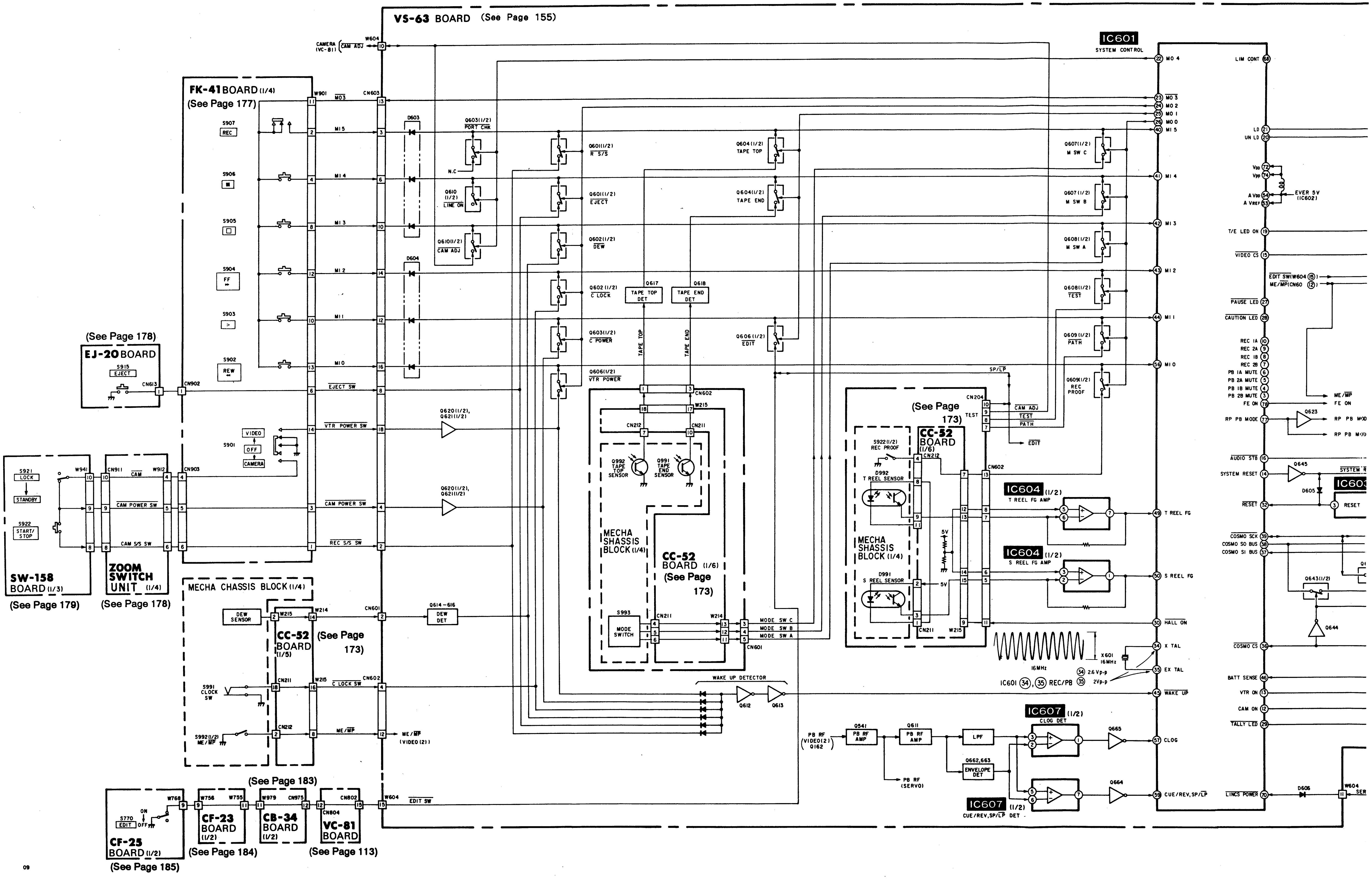

VS-63 BOARD (See Page 140)
IC102
CH-1 REC/PB AMP
(IC101 ㊷)
CH-1A REC AMP
CH-1B REC AMP
VCA
ATF SW NORMAL
MULTI
6dB AMP
LOGIC CONTROL
DUMPING
REC Y
REC AFM
REC C
SP/LP
REC ATF
RP PB MODE
VIDEO HEAD CH-1
CN101
BPF
-6dB AMP
9dB AMP
CH-1A HEAD AMP
CH-1B HEAD AMP
MIDDLE TUNE
PCM
MUTING
12dB AMP
GCA
RF AGC
DETECT
DOC DETECT
RF SWP
Q162
BUFFER
Vcc
Vcc EF
Vcc 1CH
Vcc 2CH
VIDEO 5V (W605 ②)
RV113 PB EQ CH-1
Q166
REC Y PB MUTING
TP161
REC Y RF
REC Y RF (Q237 Ⓔ)
REC C RF (Q241 Ⓔ)
V: 5mv/div.
H: 0.1μsec/div.
TP161 REC
RP PB MODE (Q623)
SYSCON
SP/LP (IC205 ⑭)
VIDEO (1)
PB RF
0.6Vp-p
2V
IC102 ⑯ PB
PB RF CH-1
PB RF CH-2
CN203
REC AFM RF
PB RF
AUDIO (AU-92)
IC101
CH-2 REC/PB AMP
RV112 PB EQ CH-2
CH-2A HEAD AMP
CH-2B HEAD AMP
DOC PULSE
4.8Vp-p
IC101 ⑪ REC/PB
IC102 ⑪ REC/PB
RF SWP (IC601 ⑳)
1/2 RF SWP (IC001 ⑳)
REC ATF (Q543)
SERVO
VIDEO HEAD CH-2
CH-2A REC AMP
CH-2B REC AMP
SL/LP
2.7Vp-p
H
IC101 ㉘ REC
IC102 ㉘ REC
(IC102 ㊷)
Q161
GAIN SWITCH
ME/MP (IC602 ⑫)
FLYING ERASE HEAD
Q191,193
ERASE OSC
Q192
ERASE CURRENT SWITCH
FE ON (IC601 ⑳)
CN204
PB RF CH1
PB RF CH2
RF SWP
1/2 RF SWP
TEST

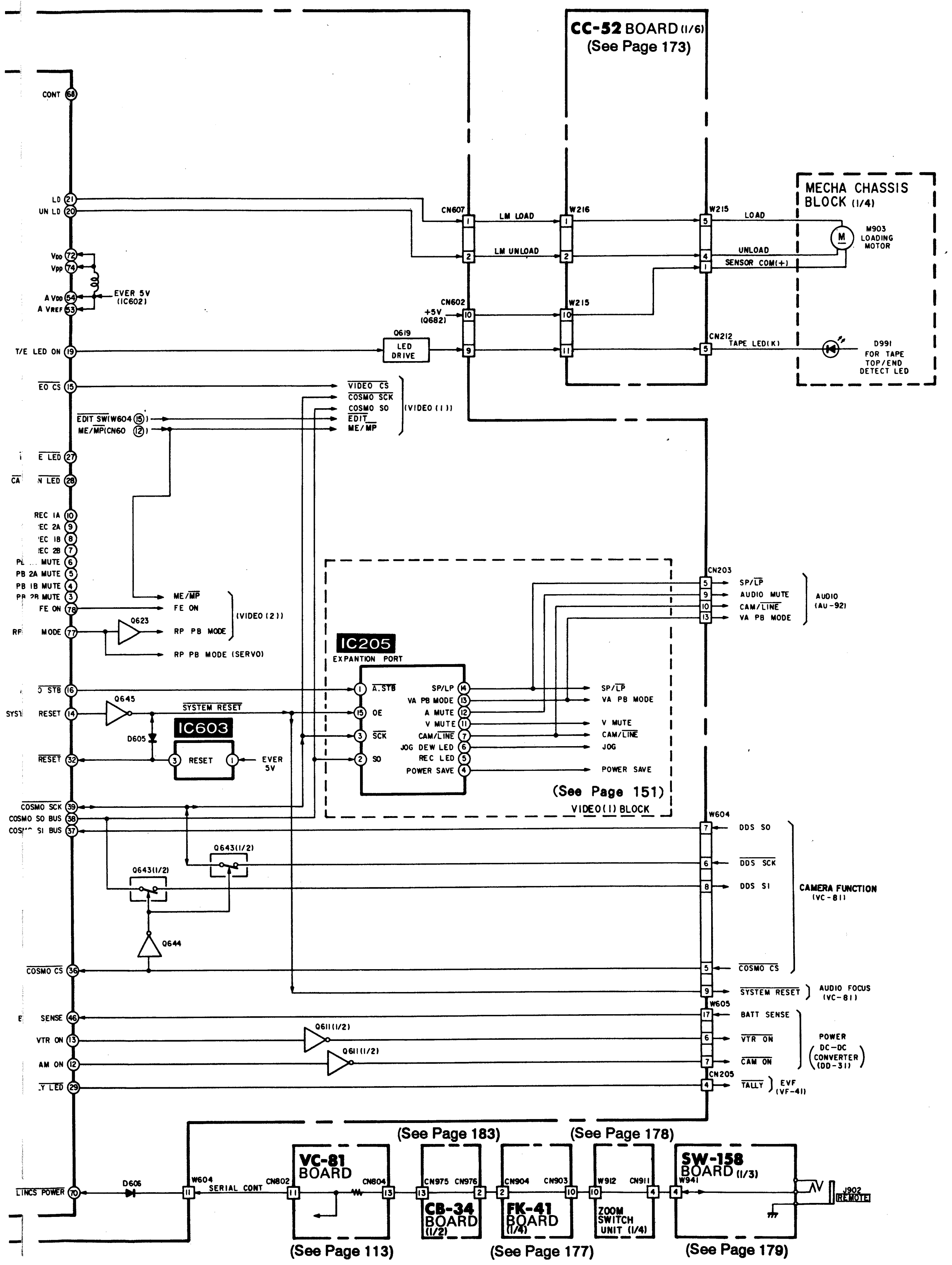
3-9. SERVO BLOCK DIAGRAM


VS-63 BOARD
(See Page 140, 155)
(See Page 173)
CC-52 BOARD
MECHA CHASSIS BLOCK
DRUM
PG
FG
W213
W214
CN501
IC502 (1/2)
PRE
COMP
LEVEL CHIPT
DC BIAS
D FG
D PG
IC502 ② 0.05Vp-p
IC502 ③ 5Vp-p
2.8msec
IC502 ①⑩ REC/PB
33msec (3/4)
5Vp-p
IC502 ⑨ REC/PB
RV602 SW POS ADJ
IC601 SERVO
DRUM FG
DRUM PG
SW POS ADJ
DRUM FWD/RVS
DRUM ON
DRUM STEP
SYSTEM SYNC
COMPOSITE SYNC
JOG VD
CAP FG (SERVO)
CAP FG (HMS COUNTER)
DRUM ON
1/2 RF SWP
RF SWP
ATF ERROR
CAP PWM
CAP ERH
RP PB MODE
SEL 1
SEL 2
CAP FWD/RVS
CAP ON
AVDD
AVRBP
DRUM D/A
IC602
5V REG
IC501 (1/3)
IC501 (1/3)
R503
C501
R504,505
1/2 VDD
W605
DC/DC CONV (DD-31 BOARD)
IC102
CN2
DRUM ERROR
PWM MOD
TRAIANGLE WAVE
2.4Vp-p
H
IC601 ㊳ REC/PB
COMP SYNC
JOG VD
RF SWP
VIDEO (1)
1/2 RF SWP
RF SWP
VIDEO (2)
5Vp-p
2V
IC601 ⑳ REC/PB
(See Page 158)
CAPSTAN FG
CN502
W502
+B
REG 5V (W503 ③)
C FG (+)
C FG (−)
RV502 CFG OFF SET ADJ
IC502 (1/2)
1.1msec
5Vp-p
IC502 ⑫ REC/PB
IC604
CAP PWM LPF
Q573
LIMITER
CAP ERROR
IC101
PWM MO
TRIANGLE OSCILLATOR
DRUM VS
CAP VS
Q571 - 572
CORRELATION LIMIT DETECTOR
DC/DC CONV (DD-31 BOARD)
PB RF (SYSCON) (Q661)
SP/LP VIDEO (1) (IC205 ⑭)
SP/LP
IC505
ATF SERVO
GAIN CONT
PB RF (Q162)
Q541 PB RF BUFFER
LPF
PRE AMP
GCA
BALANCED MODULATOR
31H BPF
fH BPF
PEAK DET
PEAK DET
SAMPLING HOLD
SAMPLING HOLD
SCHMITT
VREP
AMP
ATF ERROR
CH1/CH2
TS A
RP PB MODE
VIDEO (2)
REC ATF
Q542,543 REC ATF LPF
REC ATF
58 56 36 40
OSC
X501 5.94755MHz
3Vp-p
5.94MHz
IC505 ⑭ REC/PB
REG 5V (W605 ③)
D Vcc
A Vcc
CN204 CHECK PIN
REC C
4Vp-p
5.94MHz
IC505 ⑯ REC/PB


/3)
DC/DC CONV
(DD-31 BOARD)
IC102
W605
CN2
DRUM ERROR
PWM MOD
TRAIANGLE WAVE
MOTOR UNREG
SWITCHING Q104,105
DRUM VS
IC501 (1/3)
DRUM MOTOR DRIVE
BRAKE
VS
DIR
STAT
STBY
START CONTROL
TIMING CONTROL
SOFT SWITCHING DRIVE
OUTPUT DRIVE BUFFER
REG 5V (W605 ③)
VTR UNREG (W605 ⑧)
Vcc 2
Vcc
ROTATER POSITION DETECT
OVER CURRENT DETECT
COM
W IN
V IN
U IN
L.C SET
I SNS
IB SET
I COM
U
V
W
DRUM V
DRUM U
DRUM W
DRUM COM
CN501
W124
W213
CC-52 BOARD
(See Page 173)
MECHA CHASSIS BLOCK
M901 DRUM MOTOR
IC
VIDEO (1)
Q501
DRUM DRIVE SATULATION CONTROL
DRUM I COM
RF SW P
CN204
CHEACK PIN
CN203
RF SWP } AUDIO (AU-92)
CN202
RF SWP } CAMERA REC (VC-81)
WP
VIDEO (2)
DC/DC CONV
(DD-31 BOARD)
IC101 (1/3)
CAP ERROR
PWM MOD
TRIANGLE OSCILLATOR
MOTOR UNREG
Q106 SWITCHING
CAP VS
CN2
W605
CAP NFB
IC504
CAPSTAN MOTOR DRIVE
CAP VS
CAP FWD/$\overline{\text{RVS}}$
CAP ON
CAP $\overline{\text{CW}}$/CCW
STBY
POWER OFF
120° LOGIC
HE POWER
Vcc1
Vcc2
Vcc3
REG 5V (W605 ③)
VTR UNREG (W605 ⑧)
UHE (+) (−)
VHE (+) (−)
WHE (+) (−)
U
V
W
CAP U
CAP V
CAP W
C HALL Vcc
H1 (+),(−)
H2 (+),(−)
H3 (+),(−)
C HALL GND
W502
CN502
MECHA CHASSIS BLOCK
M902 CAPSTAN MOTOR
HALL DEVICE

3-10. SYSTEM CONTROL BLOCK DIAGRAM


VS-63 BOARD (See Page 155)
IC601
SYSTEM CONTROL
CAMERA (VC-81) CAM ADJ
W604
FK-41 BOARD (1/4)
(See Page 177)
W901
CN603
MO3
MI5
MI4
MI3
MI2
MI1
MI0
S907 REC
S906
S905
S904 FF
S903
S902 REW
S901 VIDEO OFF CAMERA
EJECT SW
VTR POWER SW
CAM POWER SW
REC S/S SW
D603
D604
Q603(1/2) PORT CHK
N.C
Q610 (1/2) LINE ON
Q610(1/2) CAM ADJ
Q601(1/2) R S/S
Q601(1/2) EJECT
Q602(1/2) DEW
Q602(1/2) C LOCK
Q603(1/2) C POWER
Q606(1/2) VTR POWER
Q604(1/2) TAPE TOP
Q604(1/2) TAPE END
Q606(1/2) EDIT
Q617 TAPE TOP DET
Q618 TAPE END DET
Q607(1/2) M SW C
Q607(1/2) M SW B
Q608(1/2) M SW A
Q608(1/2) TEST
Q609(1/2) PATH
Q609(1/2) REC PROOF
Q620(1/2), Q621(1/2)
(See Page 178)
EJ-20 BOARD
S915 EJECT
CN613
CN902
CN903
SW-158 BOARD (1/3)
(See Page 179)
S921 LOCK STANDBY
S922 START/STOP
W941
CN911
W912
CAM
CAM POWER SW
CAM S/S SW
ZOOM SWITCH UNIT (1/4)
(See Page 178)
MECHA CHASSIS BLOCK (1/4)
DEW SENSOR
W215
W214
CC-52 BOARD (1/5)
(See Page 173)
CN601
Q614–616 DEW DET
S991 CLOCK SW
CN211
C LOCK SW
CN602
S992(1/2) ME/MP
CN212
ME/MP
ME/MP (VIDEO(2))
(See Page 183)
CF-25 BOARD (1/2)
(See Page 185)
S770 EDIT ON OFF
W768
CF-23 BOARD (1/2)
W756 W755
(See Page 184)
CB-34 BOARD (1/2)
W979 CN975
VC-81 BOARD
CN802 CN804
(See Page 113)
EDIT SW
CN602
W215
CN212
CN211
Q992 TAPE TOP SENSOR
Q991 TAPE END SENSOR
MECHA SHASSIS BLOCK (1/4)
CC-52 BOARD (1/6)
(See Page 173)
S993 MODE SWITCH
W214
MODE SW C
MODE SW B
MODE SW A
WAKE UP DETECTOR
Q612
Q613
SP/LP
CN204
TEST
CAM ADJ
TEST
PATH
EDIT
(See Page 173)
CC-52 BOARD (1/6)
S922(1/2) REC PROOF
D992 T REEL SENSOR
D991 S REEL SENSOR
MECHA SHASSIS BLOCK (1/4)
5V
IC604 (1/2) T REEL FG AMP
IC604 (1/2) S REEL FG AMP
X601 16MHz
IC601 ㉞, ㉟ REC/PB ㉞ 2.6 Vp-p ㉟ 2Vp-p
PB RF (VIDEO(2) Q162)
Q541 PB RF AMP
Q611 PB RF AMP
LPF
Q662,663 ENVELOPE DET
PB RF (SERVO)
IC607 (1/2) CLOG DET
IC607 (1/2) CUE/REV,SP/LP DET
Q665
Q664
MO4
MO3
MO2
MO1
MO0
MI5
MI4
MI3
MI2
MI1
MI0
T REEL FG
S REEL FG
HALL ON
X TAL
EX TAL
WAKE UP
CLOG
CUE/REV,SP/LP
LIM CONT
LD
UN LD
VDD
VPP
A VDD
A VREF
EVER 5V (IC602)
T/E LED ON
VIDEO CS
EDIT SW(W604 ⑮)
ME/MP(CN60 ⑫)
PAUSE LED
CAUTION LED
REC 1A
REC 2A
REC 1B
REC 2B
PB 1A MUTE
PB 2A MUTE
PB 1B MUTE
PB 2B MUTE
FE ON
RP PB MODE
ME/MP
FE ON
Q623
RP PB MOD
RP PB MOD
AUDIO STB
SYSTEM RESET
Q645
SYSTEM R
D605
IC60
RESET
RESET
COSMO SCK
COSMO SO BUS
COSMO SI BUS
Q643(1/2)
Q644
COSMO CS
BATT SENSE
VTR ON
CAM ON
TALLY LED
LINCS POWER
D606
W604
SER


CC-52 BOARD (1/6)
(See Page 173)
MECHA CHASSIS BLOCK (1/4)
M903 LOADING MOTOR
D991 FOR TAPE TOP/END DETECT LED
CN607
W216
W215
LM LOAD
LM UNLOAD
LOAD
UNLOAD
SENSOR COM(+)
CN602
+5V (Q682)
Q619 LED DRIVE
CN212
TAPE LED(K)
CONT
LD
UN LD
EVER 5V (IC602)
T/E LED ON
VIDEO CS
COSMO SCK
COSMO SO
EDIT
ME/MP
(VIDEO(1))
EDIT SW(W604 ⑮)
ME/MP(CN60 ⑫)
REC 1A
PB 2A MUTE
PB 1B MUTE
FE ON
RP PB MODE
RP PB MODE (SERVO)
(VIDEO(2))
Q623
IC205
EXPANTION PORT
A.STB
OE
SCK
SO
SP/LP
VA PB MODE
A MUTE
V MUTE
CAM/LINE
JOG DEW LED
REC LED
POWER SAVE
JOG
(See Page 151)
VIDEO(1) BLOCK
IC603
RESET
EVER 5V
Q645
D605
SYSTEM RESET
CN203
AUDIO MUTE
AUDIO (AU-92)
W604
DDS SO
DDS SCK
DDS SI
COSMO CS
CAMERA FUNCTION (VC-81)
AUDIO FOCUS (VC-81)
COSMO SCK
COSMO SO BUS
Q643(1/2)
Q644
W605
BATT SENSE
VTR ON
CAM ON
POWER (DC-DC CONVERTER) (DD-31)
Q611(1/2)
CN205
TALLY
EVF (VF-41)
(See Page 183)
(See Page 178)
VC-81 BOARD
CN802
CN804
SERIAL CONT
D606
CB-34 BOARD (1/2)
CN975
CN976
FK-41 BOARD (1/4)
CN904
CN903
W912
CN911
ZOOM SWITCH UNIT (1/4)
SW-158 BOARD (1/3)
W941
J902 REMOTE
(See Page 113)
(See Page 177)
(See Page 179)

3-11. SYSTEM CONTROL SECTION FUNCTION DESCRIPTION

The system control section consists of following four microcomputers:

- Mode/mechanism control microcomputer CXP80116
- DDS microcomputer μPD7503GF
- EVR microcomputer MC68HC05N4
- AF microcomputer MC68HC05C4

3-11-1. Mode/Mechanism Control Microcomputer CXP80116 (IC601 on VS-63 Board)

1. Function description

1) Power ON/OFF control
2) Key matrix read
   (Playback, Record, Fast-forward, Rewind, Pause, Stop, VIDEO/CAMERA Power Supply, Cassette Eject, START/STOP)
3) Servo
4) Loading motor control
5) Error detection
   - Battery end/pre-end
   - Tape end
   - No cassette
   - Erasure prevention
   - DEW (condensation)
   - PAUSE release
   - CLOG (head clog)
   - L.MOTOR EMERGENCY
   - Drum rotation
   - Drum phase
   - Reel rotation
   - Capstan rotation
   - Drum/capstan start
6) H.M.S. counter
7) JOG VD insertion
8) Execution of various modes

2. Abbreviated specifications

- 8-bit high-speed, highly integrated single chip microcomputer
- A/D converter, 8-bit, 8-channel
- Serial interface
- Time/counter
- Time base timer
- Vector interrupts
- High precision timing pattern generation function (high-speed output)
- PWM/DA gate pulse output, 12-bit, 2-channel
- High precision measurement function (FRC) for servo signals
- Power on reset function
- Sleep and stop functions
- External memory expansion mode, microprocessor mode
- ROM: 16 Kbytes
- RAM: 352 Kbytes
- Speed: 500 ns
- Process: C MOS
- Operating voltage: 4.5 to 5.5V
- Package: 80-pin flat package

3. Terminal function (CXP80116)

<table>
<tr><th>Pin No.</th><th>Signal Name</th><th>I/O</th><th colspan="2">Function</th><th>Connection</th></tr>
<tr><td>1</td><td>SEL 2</td><td>O</td><td colspan="2" rowspan="2">ATF REF PILOT signal frequency (f1 to f4) selecting signal. (*1)<table><tr><td>ATF REF PILOT</td><td>f_1</td><td>f_2</td><td>f_3</td><td>f_4</td></tr><tr><td>SEL 1</td><td>H</td><td>L</td><td>H</td><td>L</td></tr><tr><td>SEL 2</td><td>H</td><td>H</td><td>L</td><td>L</td></tr></table></td><td rowspan="2">To ATF servo IC
(IC505: CXA1204Q)</td></tr>
<tr><td>2</td><td>SEL 1</td><td>O</td></tr>
<tr><td>3</td><td>PB 2B MUTE</td><td>O</td><td colspan="2" rowspan="4">Not used. Fixed at "L".</td><td rowspan="4"></td></tr>
<tr><td>4</td><td>PB 1B MUTE</td><td>O</td></tr>
<tr><td>5</td><td>PB 2A MUTE</td><td>O</td></tr>
<tr><td>6</td><td>PB 1A MUTE</td><td>O</td></tr>
<tr><td>7</td><td>$\overline{\text{REC 2B}}$</td><td>O</td><td colspan="2" rowspan="4">Not used. Fixed at "H".</td><td rowspan="4"></td></tr>
<tr><td>8</td><td>$\overline{\text{REC 1B}}$</td><td>O</td></tr>
<tr><td>9</td><td>$\overline{\text{REC 2A}}$</td><td>O</td></tr>
<tr><td>10</td><td>$\overline{\text{REC 1A}}$</td><td>O</td></tr>
<tr><td>11</td><td>SYSTEM SYNC</td><td>O</td><td colspan="2">INT-V signal for drum servo. (*1)</td><td></td></tr>
<tr><td>12</td><td>CAM ON</td><td>O</td><td colspan="2">Camera DC/DC converter on/off signal. "H" when power of camera is turned on.</td><td>To DC/DC converter</td></tr>
<tr><td>13</td><td>VTR ON</td><td>O</td><td colspan="2">VTR DC/DC converter on/off signal. "H" when power of camera or video is turned on.</td><td>To DC/DC converter</td></tr>
<tr><td>14</td><td>SYSTEM RESET</td><td>O</td><td colspan="2">Reset AF microcomputer during Power ON, and input to video/audio extension port (IC205) to mute audio signal during Power ON.</td><td>Pin ⑨ of IC612 and Pin ⑳ of IC613 on VC-81 board, Pin ⑮ of IC205 on VS-63 board.</td></tr>
<tr><td>15</td><td>$\overline{\text{VIDEO CS}}$</td><td>O</td><td colspan="2">Selecting signal to video IC, CXA1200BQ and CXA1201Q of internal bus signal. Select by "L".</td><td>Pin ㉑ of IC201
Pin ⑰ of IC203</td></tr>
<tr><td>16</td><td>$\overline{\text{AUDIO STB}}$</td><td>O</td><td colspan="2">Data strobe signal to video/audio extension port (IC205) of internal bus communication. Latch by _|¯ .</td><td>Pin ① of IC205</td></tr>
<tr><td>17</td><td>CAP FWD/$\overline{\text{RVS}}$</td><td>O</td><td colspan="2">Capstan rotation direction control signal.
FWD by "H", RVS by "L". (*1)</td><td>Pin ⑳ of IC504</td></tr>
<tr><td>18</td><td>CAP ON</td><td>O</td><td colspan="2">Capstan driver ON control signal. Capstan ON by "H". (*1)</td><td>Pin ⑬ of IC504</td></tr>
<tr><td>19</td><td>T/E LED ON</td><td>O</td><td colspan="2">TAPE top/end LED driving signal.</td><td>Q619Ⓑ</td></tr>
<tr><td>20</td><td>UNLOAD</td><td>O</td><td colspan="2" rowspan="2">Loading motor control signal<table><tr><td>Conditions / Signals</td><td>OFF</td><td>LOADING</td><td>UN-LOADING</td><td>BRAKE</td></tr><tr><td>LOAD</td><td>L</td><td>H</td><td>L</td><td>H</td></tr><tr><td>UNLOAD</td><td>L</td><td>L</td><td>H</td><td>H</td></tr></table></td><td>To loading motor</td></tr>
<tr><td>21</td><td>LOAD</td><td>O</td><td>To loading motor</td></tr>
<tr><td>22</td><td>MO4</td><td>O</td><td colspan="2" rowspan="5">Only Matrix output $\overline{\text{MO3}}$ is "L" active.
Only $\overline{\text{MO3}}$ is "L" pulse output, the other ports are "H" pulse output.</td><td rowspan="5"></td></tr>
<tr><td>23</td><td>$\overline{\text{MO3}}$</td><td>O</td></tr>
<tr><td>24</td><td>MO2</td><td>O</td></tr>
<tr><td>25</td><td>MO1</td><td>O</td></tr>
<tr><td>26</td><td>MO0</td><td>O</td></tr>
<tr><td>27</td><td>$\overline{\text{PAUSE LED}}$</td><td>O</td><td>Not used.</td><td rowspan="3">Middle withstand voltage (12V), Large current (12 mA) port.</td><td></td></tr>
<tr><td>28</td><td>$\overline{\text{CAUTION LED}}$</td><td>O</td><td>Not used.</td><td></td></tr>
<tr><td>29</td><td>$\overline{\text{TALLY LED}}$</td><td>O</td><td>External TALLY LED and EVF internal TALLY drive. "L" when TALLY LED is lit.</td><td>TALLY LED</td></tr>
</table>

Pin No.
30
31
32
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58
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61
62

nnection

servo IC
C .1204Q)

C onverter

C converter

f I 12 and
f IC613 on
oard, Pin ⑮ of
n V -63 board.

f IC201
f IC203

f I 05

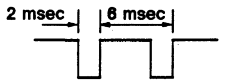
f I 04

f IC504

ng motor

ng otor

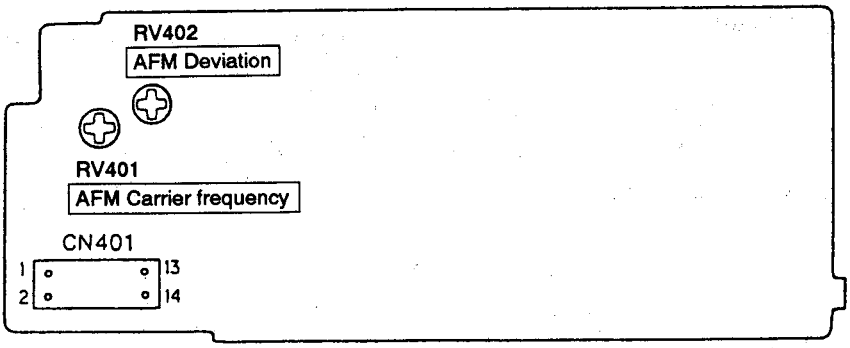
L)

Pin No.	Signal Name	I/O	Function	Connection
30	$\overline{\text{HALL ON}}$	O	Reel FG sensor LED drive, middle withstand voltage and large current port. 	Reel sensor
31	MP	I	Microcomputer processor mode selecting pin → unselecting.	GND
32	$\overline{\text{RESET}}$	I	Reset input. “L” active.	Pin ③ of reset IC IC603
33	V_{SS}		GND	GND
34	XTAL	O	Crystal connecting pin for system clock oscillation. Oscillation at: 16 MHz.	Oscillation crystal X601
35	EXTAL	I		
36	$\overline{\text{COSMO CS}}$	I	Selecting signal from DDS microcomputer of internal bus communication to mode/mechanism control. Selected by “L”.	DDS microcomputer Pin ⑭ of IC561 on VC-81 board
37	COSMO SI BUS	I	Serial data input pin.	
38	COSMO SO BUS	O	Serial data output pin.	
39	$\overline{\text{COSMO SCK}}$	I/O	Input/output pin for serial clock.	
40	MI 5	I	Matrix input.	
41	MI 4			
42	MI 3			
43	MI 2			
44	MI 1			
45	$\overline{\text{WAKE UP}}$	I	STBY release input. Released by “L”.	
46	BATT SENSE	I	Battery end/pre-end voltage input. A/D input pin.	Inside BATT END ADJ (DD-31 board RV101)
47	N.C.			
48	SW POS ADJ	I	Switching position adjustment input (Test mode). A/D input pin	SW POS ADJ RV602
49	T REEL FG	I	T-reel/S-reel FG input. A/D input pin.	Pin ⑦ of IC604
50	S REEL FG	I		Pin ① of IC604
51	ATF ERROR	I	ATF error (ATF LOCK error)input. A/D input pin.	Pin ⑫ of ATF IC IC505
52	AV_{SS}		A/D converter GND pin.	GND
53	AV_{REF}	I	A/D converter reference voltage input pin	Pin ① of regulator IC IC602 for EVER 5V
54	AV_{DD}		A/D converter positive power supply pin	
55	DRUM PG	I	DRUM PG input. FRC (High precision timer)capture input pin.	Pin ⑨ of Sense amp IC502
56	MI 0	I	Matrix input	
57	CLOG	I	Clog detection signal input. Clog by “H”.	Q665 ©
58	COMPOSITE SYNC	I	Composite sync signal input (Incorporated V SYNC separator)	Pin ⑭ of VIDEO IC IC201
59	CUE/REV SP/$\overline{\text{LP}}$	I	SP/LP discrimination signal input when CUE/REV, etc. “H” when SP mode, “L” when LP mode.	Q664 ©
60	DRUM PG	I	Not used.	Pin ⑨ of Sense amp IC502
61	DRUM FG	I	DRUM FG input pin. FRC capture input pin.	Pin ⑩ of Sense amp IC502
62	CAP FG	I	CAPSTAN FG input pin. FRC capture input pin.	Pin ⑫ of Sense amp IC502

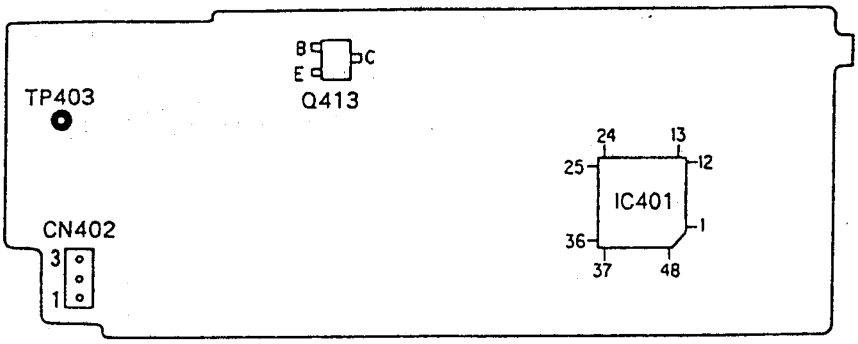
Pin No.	Signal Name	I/O	Function	Connection
63	DRUM STEP	O	Not used.	
64	DRUM $\overline{\text{FWD}}$/RVS	O	DRUM rotation direction control signal. RVS by “H”, FWD by “L”.	Pin ③ of IC501
65	CAP ERH	O	H level output pin to set capstan error to maximum level when capstan start and stop.	Pin ⑫ of IC604
66	DRUM D/A	O	DA gate pulse output pin to output DRUM error. Exclusive servo output pin (DA mode).	
67	CAP PWM	O	PWM output pin servo exclusive output pin to output cap error (PWM mode)	
68	LIM CONT	O	Not used.	
69	CAP FG	I	External event input pin to Cap FG input pin exclusive counter for Tape counter drive	Pin ⑫ of Sense amp IC502
70	$\overline{\text{LINCS POWER}}$	I	Input to release microcomputer standby to turn on the unit from external with remote commander.	Remote jack Pin ② of J941 on SW-158 board
71	$\overline{\text{NMI}}$	I	Non-maskable interrupt request pin. NMI is not used.	EVER 5V
72	V_{DD}		Positive power supply pin	EVER 5V
73	V_{SS}		GND pin.	GND
74	V_{PP}		N.C.	EVER 5V
75	DRUM ON	O	DRUM driver ON control signal.	Pin ⑦ of IC501
76	JOG VD	O	Insert to VIDEO signal when variable speed playback. Simulated VD output pin. (*1)	Pin ⑤ of IC201
77	RP PB MODE	O	Switching signals for REC/PB amplifier and REC/PB mode of ATF IC. (*1)	ATF IC Pin ㉕ of IC505 REC/PB amp (IC101, IC102)
78	$\overline{\text{FE ON}}$	O	RF SWP output pin (*1)	Flying erase oscillation circuit
79	RF SWP	O	RF SWP output pin. (*1)	REC/PB amp
80	RF SWP	O	RF SWP output pin. (*1)	REC/PB amp Video system

*1: High precision real time pattern output and high precision real time pulse output terminal

AU-92 BOARD (COMPONENT SIDE)


RV402
AFM Deviation
RV401
AFM Carrier frequency
CN401
1
2
13
14

AU-92 BOARD (CONDUCTOR SIDE)


B
E
C
Q413
TP403
24
13
25
12
IC401
1
36
37
48
CN402
3
1

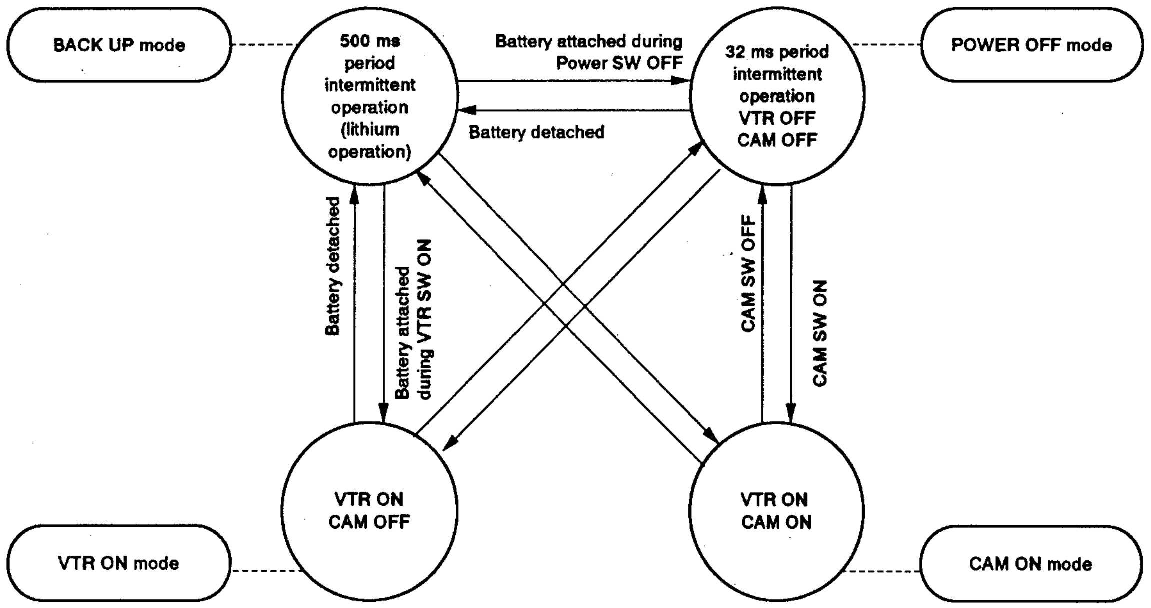
3-11-2. DDS microcomputer µPD7503GF (IC561 on VC-81 Board)

1. Function description

1) Internal data communication control
2) Date/time measurement
3) LCD indication
4) Reading of key matrix
(White balance, electronic shutter, edit search +/–, auto-lock, focus mode, counter reset, zero memory, title, store, color/mode, backlight, compensation, date/forward, time/set, fader)

2. Operation modes

- As shown in the chart below, the operation mode is shifted according to the position of the power switch (Camera/off/Video) and whether or not there is a main battery.


BACK UP mode
500 ms period intermittent operation (lithium operation)
Battery attached during Power SW OFF
Battery detached
32 ms period intermittent operation VTR OFF CAM OFF
POWER OFF mode
Battery detached
Battery attached during VTR SW ON
CAM SW OFF
CAM SW ON
VTR ON CAM OFF
VTR ON CAM ON
VTR ON mode
CAM ON mode

- **The main DDS microcomputer functions in each mode is as follows.**

Mode	Main Battery	Power Switch	Microcomputer power supply	Clock Mode	LCD	EVF	Main Functions
BACK UP	No	Camera/ off/ video	LI 3V (Lithium battery)	500 ms period intermittent oscillation	–	–	• Backup of title and tape counter data • Clock count operation
POWER OFF	Yes	Off	EVER 5V (Main battery)	32 ms period intermittent oscillation	○	–	• Counter/date/time indication to LCD • Date/time set function (Zero memory and counter reset are invalid.)
VTR ON	Yes	Video	EVER 5V + SS 5V (Main battery)	Continuous oscillation	○	–	• Serial communication with EVR and mode/mechanism control microcomputer • Indication to LCD • Acceptance of zero memory and counter reset keys
CAM ON	Yes	Camera	EVER 5V + SS 5V (Main battery)	Continuous oscillation	○		• VTR ON functions and all camera features • Indication control for white balance, focus, titles, electronics shutter, etc. • Indication to EVF and LCD

3. Terminal function and input/output level (µPD7503GF)

Pin No.	Signal Name	I/O	Functions and I/O Level
1	——	–	
2	$\overline{\text{CMO 2}}$	O	Key matrix output signal. "L" pulse of 18 ms (VTR mode) or 1V period (camera mode).
3	$\overline{\text{CMO 1}}$	O	
4	$\overline{\text{CMO 0}}$	O	
5	DDS SI	I	Serial communication and data input. V period "L" pulse train.
6	DDS SO	O	Serial communication and data output. V period "H" pulse train.
7	$\overline{\text{DDS SCK}}$	I/O	Serial communication and serial clock input/output. V period "L" pulse train.
8	$\overline{\text{TEST}}$	I	Test mode input. Normally "H".
9	$\overline{\text{LI PE}}$	I	Lithium battery pre-end detection. Normally "H". "L" when lithium battery voltage drops.
10	VTR PWR	I	SS 5V power detection. "H" when power on.
11	CG BUSY	I	Busy signal input from character generator. V period "H" pulse train.
12	CMO 4	O	Key matrix output signal. "H" pulse of 18 ms (VTR mode) or 1V period (camera mode).
13	$\overline{\text{EVR CS}}$	O	Chip select signal to EVR microcomputer (IC361 on VC-81 board). "L" pulse of 1V period.
14	$\overline{\text{COSMO CS}}$	O	Chip select signal to servo/system control microcomputer (IC601 on VS-63 board). "L" pulse of 1V period.
15	CG STB	O	Strobe signal for character generator. 1V period "H" pulse train.
16	TG CS	O	Not used.
17	SRAM CS	O	Chip select signal to static RAM (Not used) VTR mode: "L" Camera mode: Normally "L". "H" during title operation.
18	TITLE CS	O	Chip select signal to title controller (Not used) VTR mode: "L" Camera mode: "H" pulse of 1V period.
19	LCD OFF	O	LCD indication ON/OFF control output. Normally "L" (0V). "H" (3V) when backed up by lithium battery.
20	X2	O	Crystal oscillation circuit for clock. Oscillation frequency is 32.768 kHz
21	X1	I	
23	VLC 3	I	LCD power supply 3 input pin. Normally 0V. 3V when backed up.
24	VLC 2	I	LCD power supply 2 input pin. Normally 1.7V. 3V when backed up.
25	VLC 1	I	LCD power supply 1 input pin. Normally 3.3V. 3V when backed up.
26	VDD	I	Power supply input pin.
27	COM 3	O	LCD remote control pin driving output 3. 4 values outputs of 0, 1.7, 3.3, 5V.
28	COM 2	O	LCD remote control pin driving output 2.
29	COM 1	O	LCD remote control pin driving output 1.
30	COM 0	O	LCD remote control pin driving output 0.

Pin No.
31 to 40
41 to 54
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62
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64

Pin No.	Signal Name	I/O	Functions and I/O Level
31 to 40	———	I	Not used
41 to 54	S13 to S0	O	LCD segment pin driving output, 13 to 0. 4 values outputs of 0, 1.7, 3.3, 5V.
55	INT 1	I	Interrupt input by camera VD. VTR mode: "H". Camera mode: "H" pulse of 1V period.
56	RESET	I	Normally "L".
57	CL 1	I	System clock oscillation pin. • When video power ON or camera power ON: Continuous oscillation (Oscillation frequency: approx. 330 kHz). • When power OFF: 32 ms period intermittent oscillation (Oscillation frequency: approx. 330 kHz) • When backed up by lithium battery: 500 ms period intermittent oscillation (Oscillation frequency: approx. 70 kHz)
59	CL 2	I	
58	VDD	O	Power supply input pin.
60	CMI 3	I	Key matrix input signal. Normally "H". When key input, "L" pulse of 18 ms (VTR mode) or 1V period (camera mode).
61	CMI 2	I	
62	CMI 1	I	
63	CMI 0	I	
64	$\overline{\text{COM 3}}$	I	Key matrix input signal. Normally "H". When key input, "L" pulse of 18 ms (VTR mode) or 1V period (camera mode).

3-11-3. EVR microcomputer MC68HC05N4 (IC361 on VC-81 Board)

1. Function description

1) EVR control
2) Auto white balance control
3) Electronic shutter

2. Pin function and input/output level (MC68HC05N4)

Pin No.	Signal Name	I/O	Functions and I/O Level
1	———		———
2	$\overline{\text{SSW}}$	O	"H" only during communicating with serial switching D/A converter. "H" pulse of V period.
3	$\overline{\text{SCLK}}$	O	Serial clock output. V period "L" pulse train.
4	SI	I	Serial data input. V period "H" pulse train.
5	SO	O	Serial data output. V period "L" pulse train.
6	$\overline{\text{EVR CS}}$	I	Communication request from DDS. "L" pulse of V period.
7	L IN	I	LANC input. L: 0, H: 1. V period "H" pulse train.
8	L OUT	O	LANC output. L: 0, H: 1. V period "H" pulse train.
9	$\overline{\text{CAM ADJ}}$	I	NORMAL/ADJUST selection. Normally "H". "L" during adjustment.
10		O	
11	SSW	O	Serial signal switching. "L" pulse of V period.
12, 13	LD	O	Data load instruction to EVR (IC252, IC302). "H" pulse of V period.
14	$\overline{\text{BACK LIGHT}}$	O	"L" during backlight compensation ON.
15	IRIS I/O	I	Control from AF microcomputer, Indoor (IN): H, outdoor (OUT): L according to brightness.
16	———		
17	V_{DD}		Connected to EVER 5V.
18			GND
19	———	–	
20	PAL/$\overline{\text{NTSC}}$	I	Broadcast system selection. L: NTSC, H: PAL.
21	GND		———
22	GND		———
23	GND		———
24, 25	GND		———
26	GND	–	———
27	GND	–	———
28	CAM 5V	I	Camera power on monitoring. L: CAM OFF, H: CAM ON.
29	AW IN	I	AWB A/D timer stop. Pattern drive interrupt. Normally 2V period pulse.
30	AW ADJ	O	AWB preset data fetch. Normally "L". "H" during auto white balance adjustment.
31	———	–	NC
32	———	–	———
33	———	–	———
34	S3SW	O	AWB measurement signal selection. "H" pulse of 3V period.
35	S2SW	O	AWB measurement signal selection. "H" pulse of 3V period.
36	DISCHG	O	Capacitor reset pulse for timer measurement lamp voltage generation. "H" pulse of V period.
37	———	–	———
38	S1SW	O	AWB measurement signal selection. "H" pulse of 3V period.
39	———	–	———
40	OSC2	O	Built-in inverter output for oscillation. Oscillation frequency: 4 MHz.
41	OSC1	I	Built-in inverter input for oscillation.
42	V_{DD}		Connected to EVER 5V.
43	———		———
44	$\overline{\text{RESET}}$		Normally "H". "L" when reset.
45	$\overline{\text{IRQ}}$		Connected to $\overline{\text{EVR CS}}$ signal. "L" pulse of V period.
46	———	–	Normally "H". "L" when reset.
47	———	–	Normally "H". "L" when reset.
48	$\overline{\text{A/D EN}}$	O	1-bit A/D converter operation ON/OFF output for titler. Normally "H". "L" for 7V period when title memory button is pressed. (not used)

3-11-4. AF microcomputer MC68HC05C4 (IC613 on VC-81 Board)

1. Function description

1) AF control
2) Power focus
3) Zoom motor drive

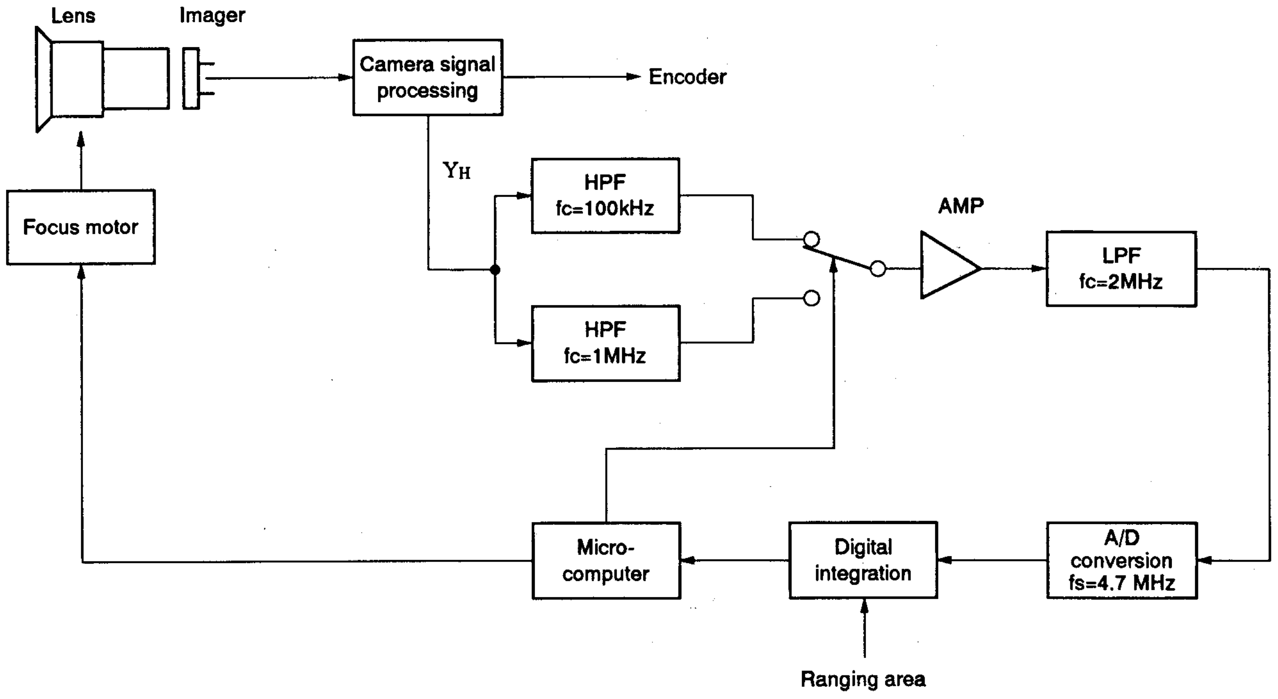
2. Auto focus system of this unit
(Λ -AF: Image processing system)

The high frequency components of video signal (actually luminance signal) are microcomputer processed by TTL without using external sensors to control the focus).

3. Outline of operation

The frequency components from 100k to 2 MHz and from 1M to 2 MHz are extracted from the luminance (Y) signal, and these are digitally integrated for each field. This integration value is called the evaluation value. This evaluation value becomes the information for auto focusing, and focus ring is controlled by finding the peaks in the evaluation values based on the concepts that:

Picture is in focus → edges of image become clearer → high frequency components of image increase → evaluation value increases



4. Pin f

Pin No.
1
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4. Pin function and Input/output level (MC68HC05C4)

Pin No.	Signal Name	I/O	Functions and I/O Level
1	$\overline{\text{SS}}$ OUT	O	EVR data read timing output (PD5 SS input). V period "L" pulse train.
2	IRIS I/O	O	Indoors/outdoors determination according to aperture value. "H" for indoors and "L" for outdoors.
3	LED CONT	O	Focus position detect LED drive signal. V period "H" pulse.
4			
5			
6	$\overline{\text{MACRO}}$	O	Signal to DDS microcomputer (IC561 on VC-81 board). "L" when zoom ring is at MACRO position.
7	——	–	
8			Not used.
9	——	–	
10	——	–	
11	$\overline{\text{ZOOM T}}$	O	Normally "H". "L" when zoom motor is rotated in telephoto direction.
12	$\overline{\text{ZOOM W}}$	O	Normally "H". "L" when zoom motor is rotated in wide angle direction.
13	Focus N	O	Normally "L". "H" when focus motor is rotated in far range direction.
14	——	–	
15	Focus F	O	Normally "L". "H" when focus motor is rotated in close range direction.
16	F SPD ϕ	O	Not used.
17	——	–	
18	F SPD1	O	Not used.
19	F SPD2	O	Not used.
20	——	–	
21	F SPD3	O	Not used.
22	——	–	
23	Vss	–	Connected to GND.
24	Vss	–	Connected to GND.
25	——	–	
26	$\overline{\text{F SENS 1}}$	I	Focus position detection signal. V period "H" pulse when focus ring is between about 1.3m and 3m.
27	——	–	
28	WINDOW	O	Auto focus window signal. V period "H" pulse.
29	——	–	
30	$\overline{\text{F SENS 2}}$	I	Focus position detection signal. V period "H" pulse when focus ring is between about 2m and ∞.
31	AF SSW	O	Timing output for bus selection. "H" pulse of V period.
32	——	–	
33	DA STB	O	D/A converter for AF. For data latch. V period "H" pulse train.
34	PAL/$\overline{\text{NTSC}}$	I	PAL/NTSC selection.
35	——	–	
36	$\overline{\text{J STB}}$	O	External display jig. For data latch. "L" pulse of V period.
37	XCS	O	Active "L" for communication request to IC612 (CXD-1204). "L" pluse of V period.
38	PD0	I	Connected to VDD.
39	——	–	
40	PD1	I	Connected to VDD.
41	MISO	I/O	SPI MASTER: in...SLAVE: out...V period "H" pulse train.
42	MOSI	I/O	SPI MASTER: out...SLAVE: in...V period "L" pulse train.
43	$\overline{\text{SCK}}$	I/O	SPI SERIAL CLOCK. V period "L" pulse train.
44	——	–	
45	$\overline{\text{SS}}$	I	V period "L" pulse train.
46	——	–	
47	——	–	
48	EVR $\overline{\text{CS}}$	I	EVR data communication request ↓ from DDS microcomputer. "L" pulse of V period.
49	——	–	
50	——	–	
51	Focus $\overline{\text{FG}}$	I	Interrupt generation by Focus motor FG ↓. "L" when auto focus OFF. "H" pulse of period according to focus motor rotation speed when auto focus ON.
52	CLK OUT	O	Waveform shaped output of Pin (54) clock (1.79 MHz)
53	——	–	
54	CLK IN	I	External clock input. 14.3 MHz clock input to Pin ㉘ of IC612 is divided by 8 input.
55	VDD		CAM 5V
56	——	–	
57	——	–	
58	——	–	
59	——	–	
60	$\overline{\text{SYS RST}}$	I	Normally "H". "L" when resetting.
61	AREA	I	Interrupt generation by ↓ from CXD-1204 (IC612). V period pulse
62	VPP		CAM 5V
63	EXT A/M	I	Connected to VDD by 100 kΩ
64	——	–	

3-12. INTERFACE

3-12-1. System Control — Video Audio Block Interface

Signal Name	I/O	Pin No.	VTR Mode													CAMERA Mode					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB• PAUSE	FRAME	SLOW	REC	REC PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW								FWD	RVS	FWD	RVS
SP/$\overline{\text{LP}}$	O	Pin ⑭ of IC205 on VS-63 board	*1	H	H	*2	*2	*2	*2	*2	*1	*1	*1	H	H	H	H	*2	*2	H	H
VA PB MODE	O	Pin ⑬ of IC205 on VS-63 board	L	L	L	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
AUDIO MUTE	O	Pin ⑫ of IC205 on VS-63 board	L	L	L	H	H	L^{*3}	H	H	H	H	H	L	L	L	L	H	H	L	H
VIDEO MUTE	O	Pin ⑪ of IC205 on VS-63 board	L	L	L	L	L	L^{*3}	L	L	L	L	L	L	L	L	L	L	L	L	L
CAM/$\overline{\text{LINE}}$	O	Pin ⑦ of IC205 on VS-63 board	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H
JOG/DEW LED	O	Pin ⑥ of IC205 on VS-63 board	L^{*4}	L	L	H	H	L	H	H	H	H	H	L	L	L	L	L	H	L	H
$\overline{\text{REC LED}}$ *13	O	Pin ⑤ of IC205 on VS-63 board	H	H	H	H	H	H	H	H	H	H	H	L	L	H	H	H	H	H	H
POWER SAVE	O	Pin ④ of IC205 on VS-63 board	H	H	H	L	L	L	L	L	L	L	L	L	H	H	L	L	L	L	L
JOG VD	O	Pin (76) of IC601 on VS-63 board	L	L	L	*5	*5	H	*5	*5	*5	*5	*5	L	L	L	L	L	*5	L	*5
RP PB MODE	O	Pin (77) of IC601 on VS-63 board	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
$\overline{\text{FE ON}}$	O	Pin (78) of IC601 on VS-63 board	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
$\overline{\text{RF SWP}}$	O	Pin (79) of IC601 on VS-63 board	H/L	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
RF SWP	O	Pin (80) of IC601 on VS-63 board	H/L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
PB 2B MUTE	O	Pin ③ of IC601 on VS-63 board	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8
PB 1B MUTE	O	Pin ④ of IC601 on VS-63 board																			
PB 2A MUTE	O	Pin ⑤ of IC601 on VS-63 board																			
PB 1A MUTE	O	Pin ⑥ of IC601 on VS-63 board																			

Signal Name	I/O	Pin No.	VTR Mode													CAMERA Mode					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SERACH		PB• PAUSE	FRAME	SLOW	REC	REC PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW								FWD	RVS	FWD	RVS
REC2B	O	Pin ⑦ of IC601 on VS-63 board	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
REC1B	O	Pin ⑧ of IC601 on VS-63 board																			
REC2A	O	Pin ⑨ of IC601 on VS-63 board																			
REC1A	O	Pin ⑩ of IC601 on VS-63 board																			
$\overline{\text{VIDEO CS}}$	O	Pin ⑮ of IC601 on VS-63 board	"L" pulse of V period.																		
$\overline{\text{AUDIO STB}}$	O	Pin ⑯ of IC601 on VS-63 board																			
COSMO SO	O	Pin ㊳ of IC601 on VS-63 board	V period pulse train.																		
$\overline{\text{COSMO SCK}}$	I/O	Pin ㊴ of IC601 on VS-63 board																			
CUE/REV SP/$\overline{\text{LP}}$	I	Pin (59) of IC601 on VS-63 board	H	*10	*10	*10	*10	L	*10	*10	*10			H	H/L	H/L	H	L	*10	L	*10
CLOG	I	Pin (57) of IC601 on VS-63 board	H	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	H			H	*11	*11	*11
COMPOSITE SYNC	I	Pin (58) of IC601 on VS-63 board	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12

*1. Outputs the determination result of last mode. SP mode "H", LP mode "L".

*2. Outputs the determination result of recording mode of playback tape.
SP mode "H", LP mode "L".

*3. "H" at non signal portion of tape

*4. "H" after mode shift completion during dew condensation generation.

*5. Simulated VD signal

*6. 30 Hz duty 50% pulse (synchronized to drum rotation)

*7. 30 Hz duty 50% pulse (synchronized to drum rotation)

*8. Not used. Fixed at "L".

*9. Not used. Fixed at "H".

*10. "H" at SP recording portion of tape, "L" at LP recording portion.

*11. "H" at non recording portion of tape, or drop-out portion. Head clog detection input.

*12. Composite sync signal input (polarity=+) separated from line input video signal, camera video signal, or playback video signal.

*13. Not used.

3-12-2. System Control — Servo Block Interface

Signal Name	I/O	Pin No.	VTR Mode													CAMERA Mode					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB• PAUSE	FRAME	SLOW	REC	REC PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW								FWD	RVS	FWD	RVS
T.REEL FG	I	Pin ㊾ of IC601 on VS-63 board	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
S.REEL FG	I	Pin ㊿ of IC601 on VS-63 board	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
ATF ERROR	I	Pin (51) of IC601 on VS-63 board	–	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
DRUM PG	I	Pins (55) and (60) of IC601 on VS-63 board	–	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3
DRUM FG	I	Pin (61) of IC601 on VS-63 board	–	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP FG	I	Pins (62) and (69) of IC601 on VS-63 board	–	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
CAP ON	O	Pin ⑱ of IC601 on VS-63 board	L	H	H	H	H	H	H	H	L	*15	*15	H	L	L	H	H	H	H	H
SEL 2	O	Pin ① of IC601 on VS-63 board	–	–	–	*7	*7	*8	*7	*7	*9	*9	*10	*6	H	H	*6	*8	*11	*8	*11
SEL 1	O	Pin ② of IC601 on VS-63 board	–	–	–	*7	*7	*8	*7	*7	*9	*9	*10	*6	L	L	*6	*8	*11	*8	*11
DRUM STEP *12	O	Pin (63) of IC601 on VS-63 board	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
DRUM FWD/RVS *13	O	Pin (64) of IC601 on VS-63 board	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
CAP ERH *14	O	Pin (65) of IC601 on VS-63 board	–	HIZ	HIZ	HIZ	HIZ	HIZ	HIZ	HIZ	HIZ	*15	*15	HIZ	HIZ	HIZ	HIZ	HIZ	HIZ	HIZ	HIZ
DRUM D/A	O	Pin (66) of IC601 on VS-63 board	–	*16	*16	*16	*16	*16	*16	*16	*16	*16	*16	*16	*16	*16	*16	*16	*16	*16	*16
CAP PWM	O	Pin (67) of IC601 on VS-63 board	–	*17	*17	*17	*17	*17	*17	*17	*17	*17	*17	*17	*17	*17	*17	*17	*17	*17	*17
LIM CONT *12	O	Pin (68) of IC601 on VS-63 board	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
DRUM ON	O	Pin (75) of IC601 on VS-63 board	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H

*1. Pulse is input by reel rotation.

*2. ATF error voltage input.

*3. 1 PG pulse is input with 1 rotation of drum. Approx. 30 Hz.

*4. 12 FG pulses are input with 1 rotation of drum. Approx. 360 Hz.

*5. Pulses of frequency in proportion to tape speed. Approx. 948 Hz during REC/PB (SP).

*6. See timing chart 1.

*7. See timing chart 3.

*8. See timing chart 2.

*9. See timing chart 5.

*10. See timing chart 5.

*11. See timing chart 4.

*12. Not used.

*13. Normally "L". "H" temporarily only when loading/unloading (Drum inverts.)

*14. Normally HIZ (High impedance). "H" during start and stop of capstan

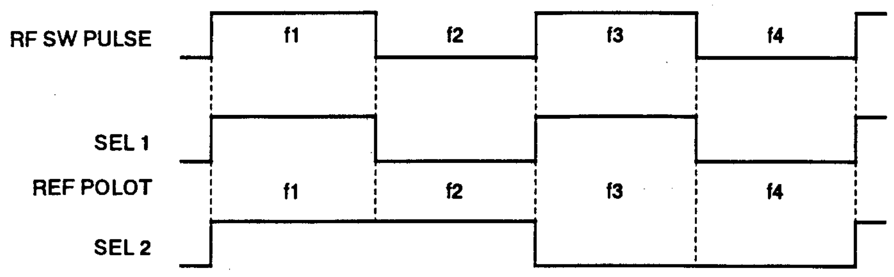
*15. "H" pulse when tape is advanced.

*16. "H" pulse/"L" pulse output as center level HIZ (2.5 Vdc).

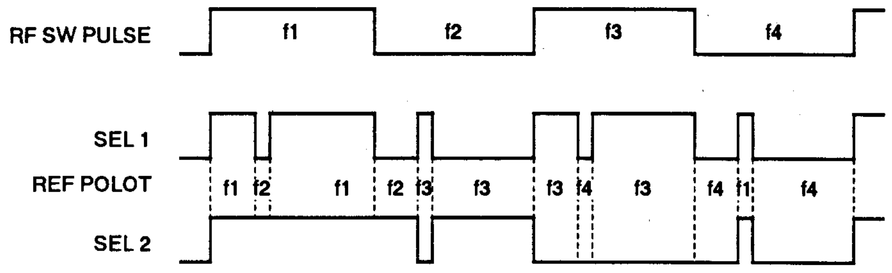
*17. 64 μsec period PWM signal

3-12-3. Timing Chart

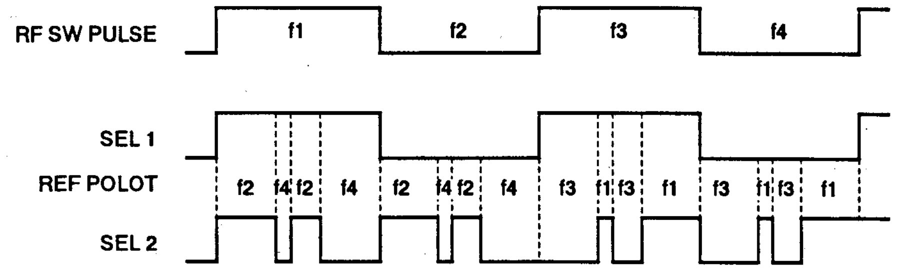
Timing chart 1. REC


RF SW PULSE
f1
f2
f3
f4
SEL 1
REF POLOT
f1
f2
f3
f4
SEL 2

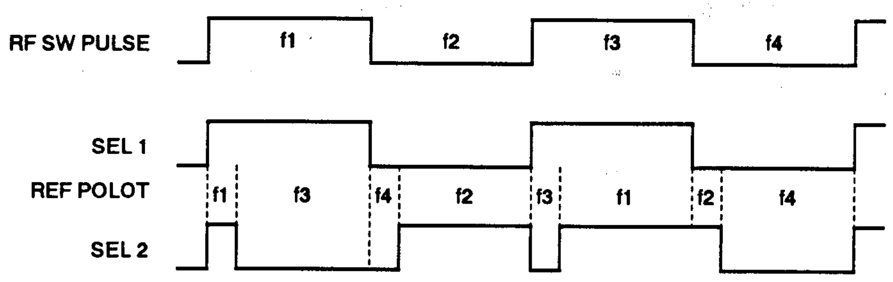
Timing chart 2. PB EDIT-SEARCH (FWD), REC-REVIEW (FWD)


RF SW PULSE
f1
f2
f3
f4
SEL 1
REF POLOT
f1 f2 f1 f2 f3 f3 f3 f4 f3 f4 f1 f4
SEL 2

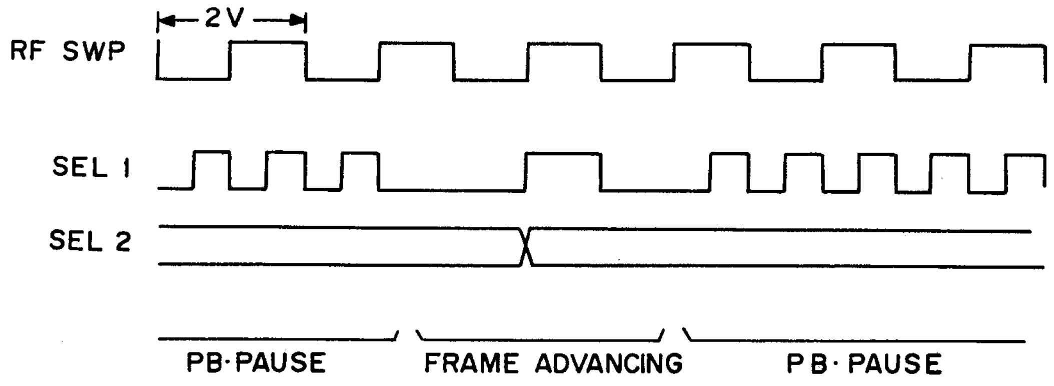
Timing chart 3. FR-SEARCH (CUE/REV), PICTURE-SEARCH (CUE/REV)


RF SW PULSE
f1
f2
f3
f4
SEL 1
REF POLOT
f2 f4 f2 f4 f2 f4 f2 f4 f3 f1 f3 f1 f3 f1 f3 f1
SEL 2

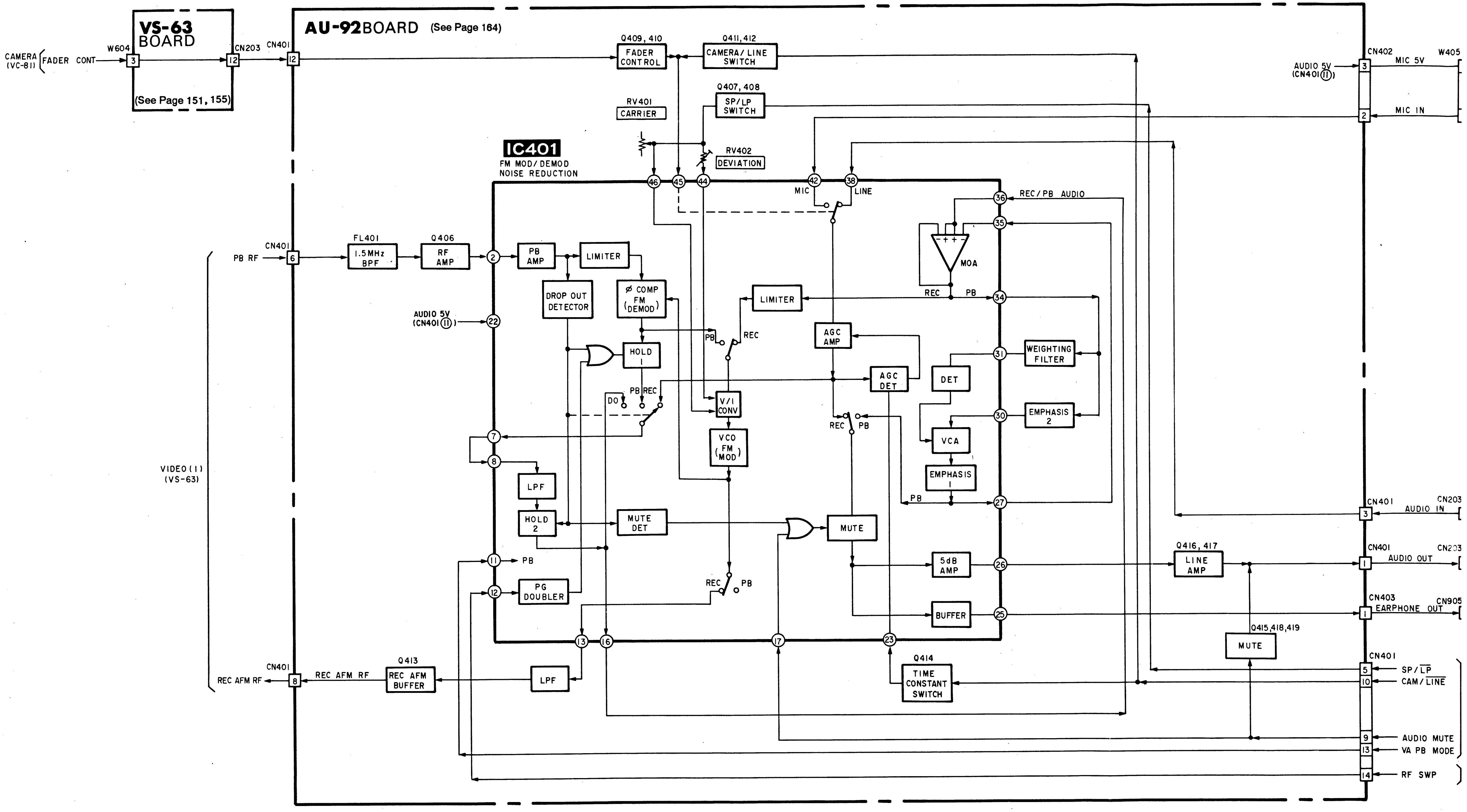
Timing chart 4. EDIT-SEARCH (RVS), REC-REVIEW (RVS)

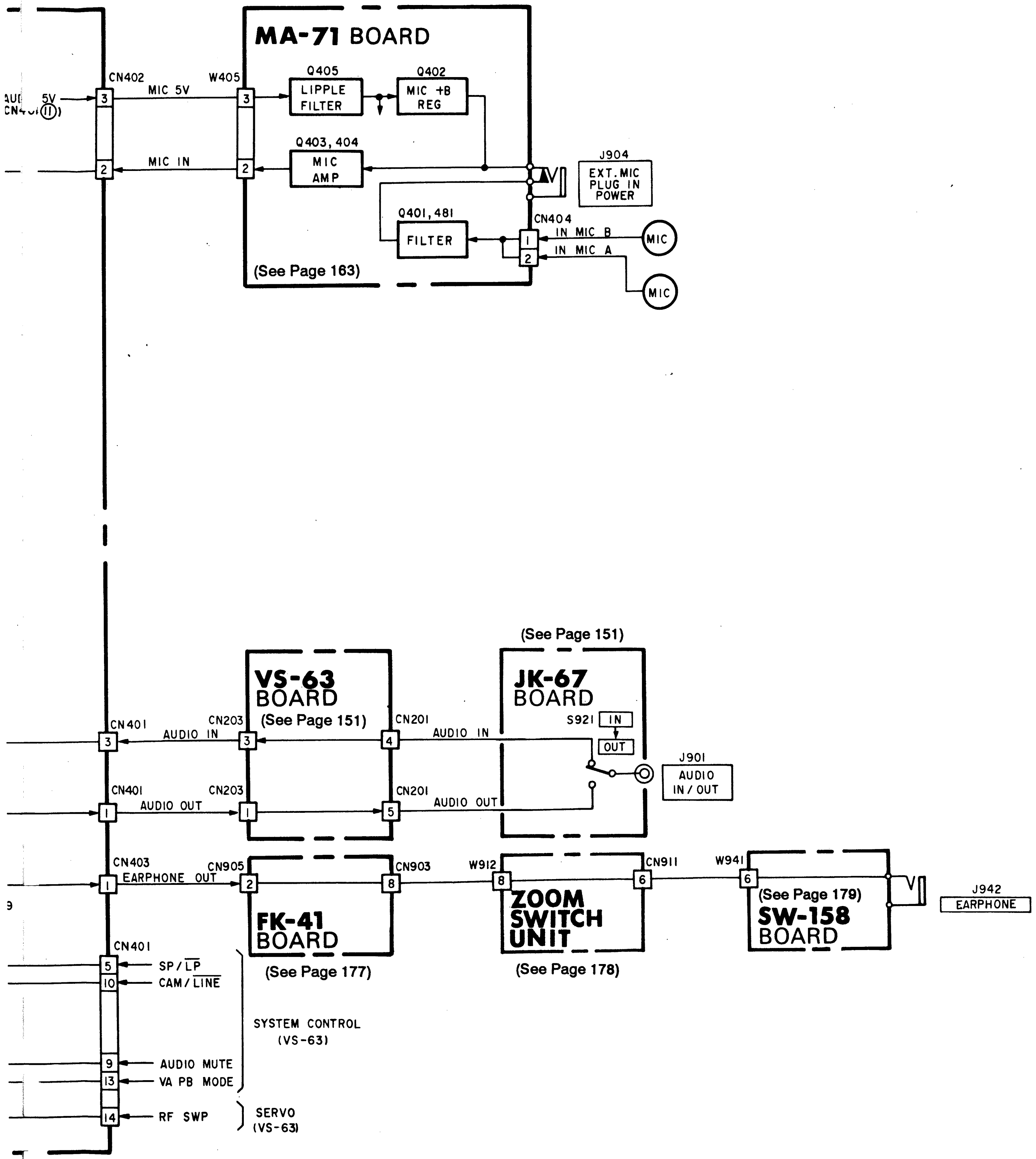

RF SW PULSE
f1
f2
f3
f4
SEL 1
REF POLOT
f1 f3 f4 f2 f3 f1 f2 f4
SEL 2

Timing chart 5. PB-PAUSE, FRAME, SLOW

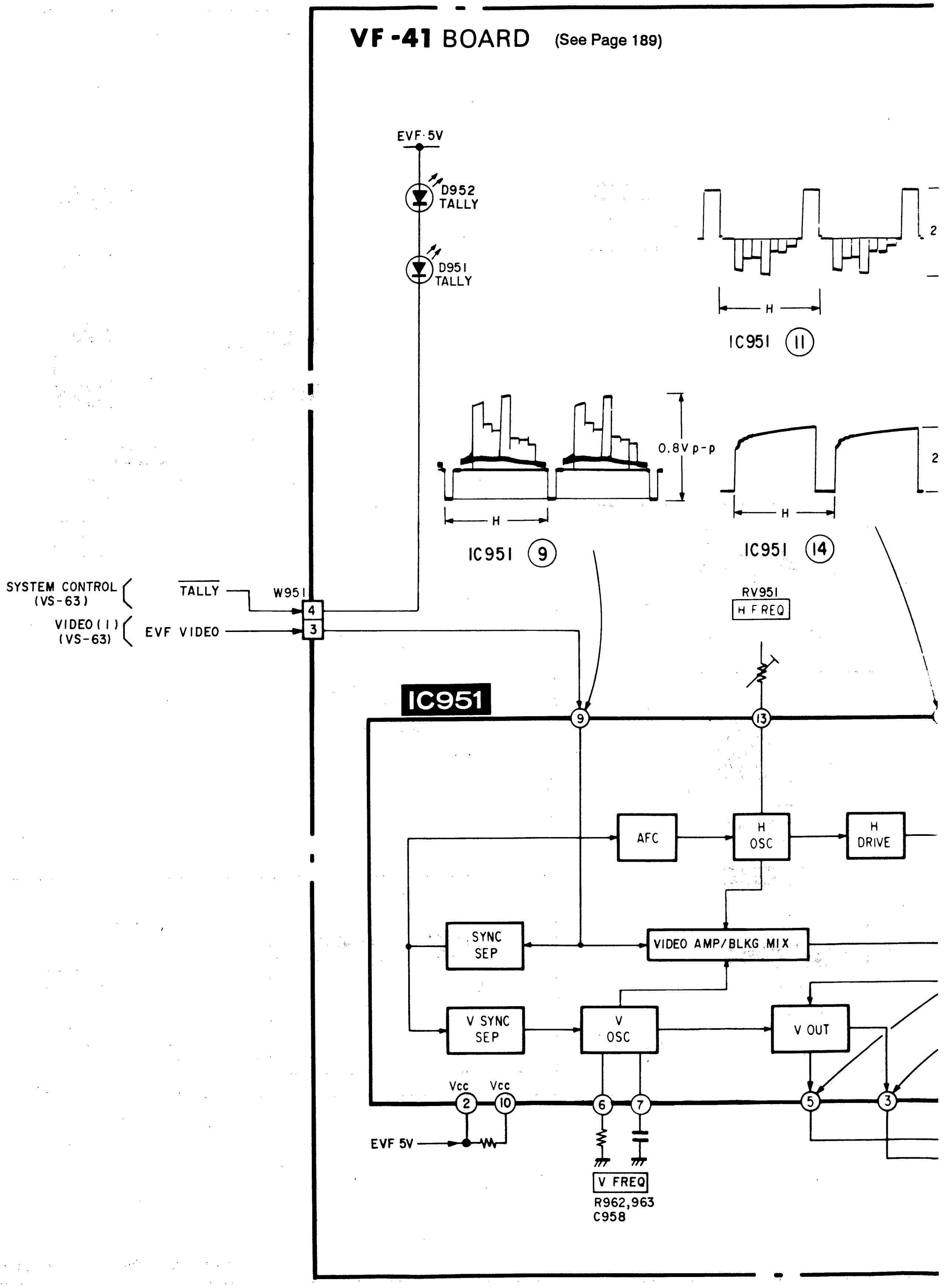

2V
RF SWP
SEL 1
SEL 2
PB·PAUSE
FRAME ADVANCING
PB·PAUSE

3-13. AUDIO BLOCK DIAGRAM

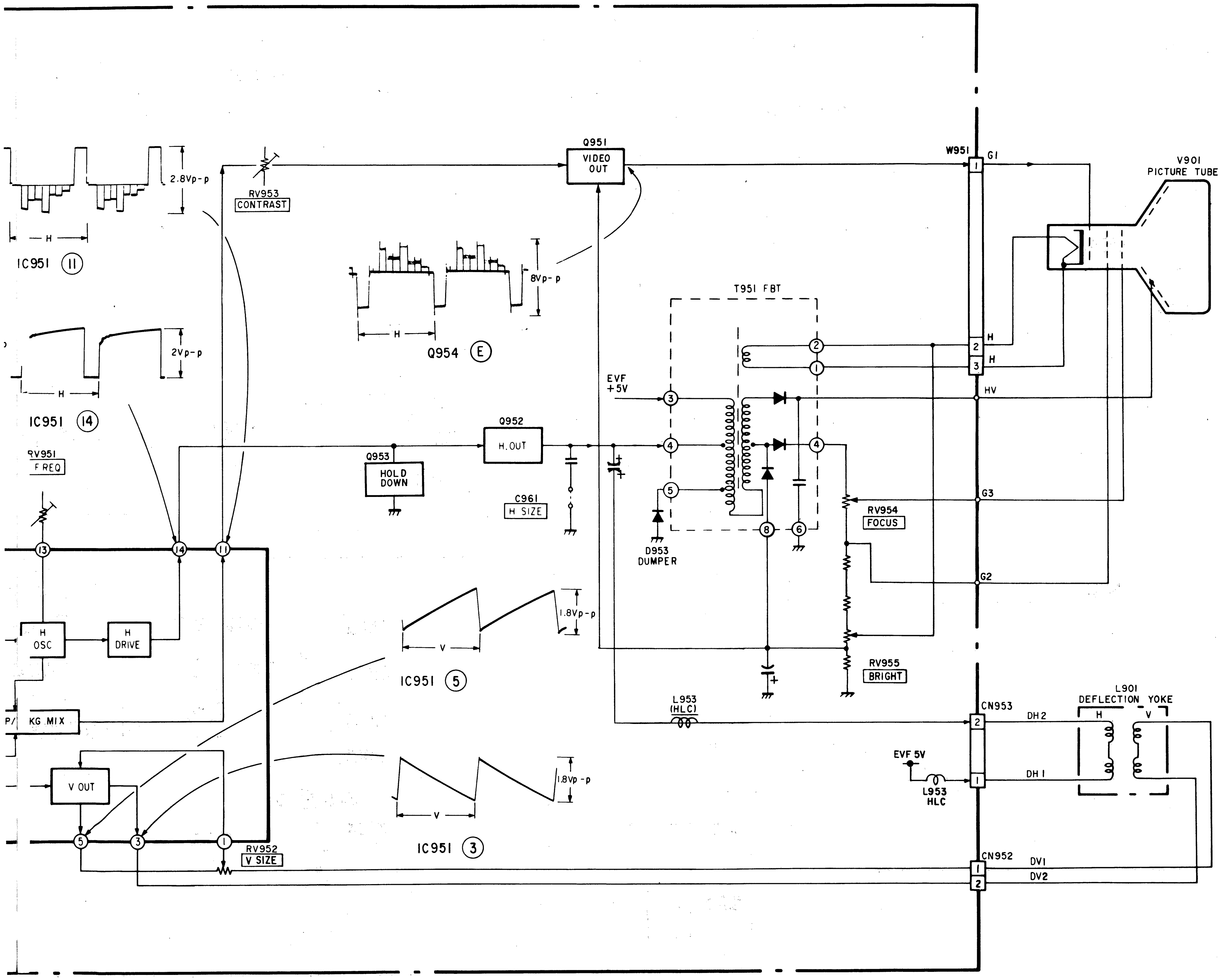

VS-63 BOARD
(See Page 151, 155)
CAMERA (VC-81)
FADER CONT
W604
CN203
CN401
AU-92BOARD (See Page 164)
Q409, 410
FADER CONTROL
Q411, 412
CAMERA/ LINE SWITCH
Q407, 408
SP/LP SWITCH
RV401
CARRIER
RV402
DEVIATION
IC401
FM MOD/ DEMOD
NOISE REDUCTION
MIC
LINE
REC/PB AUDIO
MOA
REC
PB
PB RF
FL401
1.5MHz BPF
Q406
RF AMP
PB AMP
LIMITER
DROP OUT DETECTOR
ø COMP FM (DEMOD)
AUDIO 5V (CN401⑪)
HOLD 1
LIMITER
REC
AGC AMP
AGC DET
DET
WEIGHTING FILTER
EMPHASIS 2
DO
PB REC
V/I CONV
VCO (FM MOD)
VCA
EMPHASIS 1
VIDEO (1) (VS-63)
LPF
HOLD 2
MUTE DET
MUTE
PB
5dB AMP
BUFFER
PG DOUBLER
Q413
REC AFM BUFFER
REC AFM RF
LPF
Q414
TIME CONSTANT SWITCH
Q416, 417
LINE AMP
Q415,418,419
MUTE
CN402
W405
MIC 5V
MIC IN
AUDIO IN
AUDIO OUT
CN403
CN905
EARPHONE OUT
SP/LP
CAM/LINE
AUDIO MUTE
VA PB MODE
RF SWP


MA-71 BOARD
CN402
W405
MIC 5V
MIC IN
Q405
LIPPLE FILTER
Q402
MIC +B REG
Q403, 404
MIC AMP
Q401, 481
FILTER
J904
EXT. MIC PLUG IN POWER
CN404
IN MIC B
IN MIC A
MIC
MIC
(See Page 163)
VS-63 BOARD
(See Page 151)
CN401
CN203
AUDIO IN
AUDIO OUT
CN201
JK-67 BOARD
(See Page 151)
S921
IN
OUT
J901
AUDIO IN / OUT
CN403
EARPHONE OUT
CN905
CN903
FK-41 BOARD
(See Page 177)
W912
ZOOM SWITCH UNIT
(See Page 178)
CN911
W941
(See Page 179)
SW-158 BOARD
J942
EARPHONE
SP / LP
CAM / LINE
AUDIO MUTE
VA PB MODE
RF SWP
SYSTEM CONTROL (VS-63)
SERVO (VS-63)

3-14. VIEW FINDER BLOCK DIAGRAM

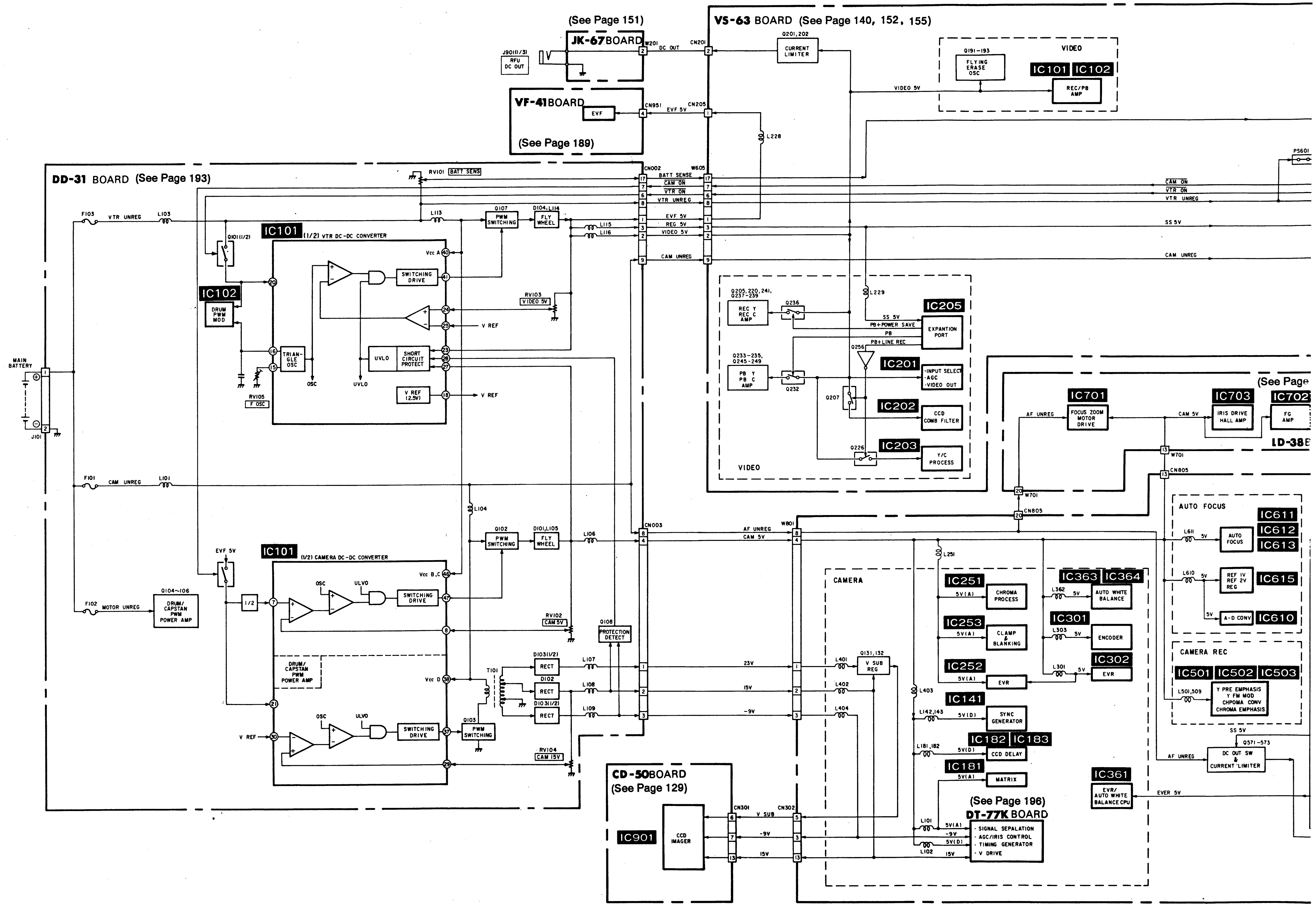

VF-41 BOARD (See Page 189)
EVF 5V
D952 TALLY
D951 TALLY
H
IC951 ⑪
0.8V p-p
H
IC951 ⑨
H
IC951 ⑭
SYSTEM CONTROL (VS-63)
TALLY
VIDEO (1) (VS-63)
EVF VIDEO
W951
4
3
RV951
H FREQ
IC951
9
13
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
Vcc
Vcc
2
10
6
7
5
3
EVF 5V
V FREQ
R962,963
C958

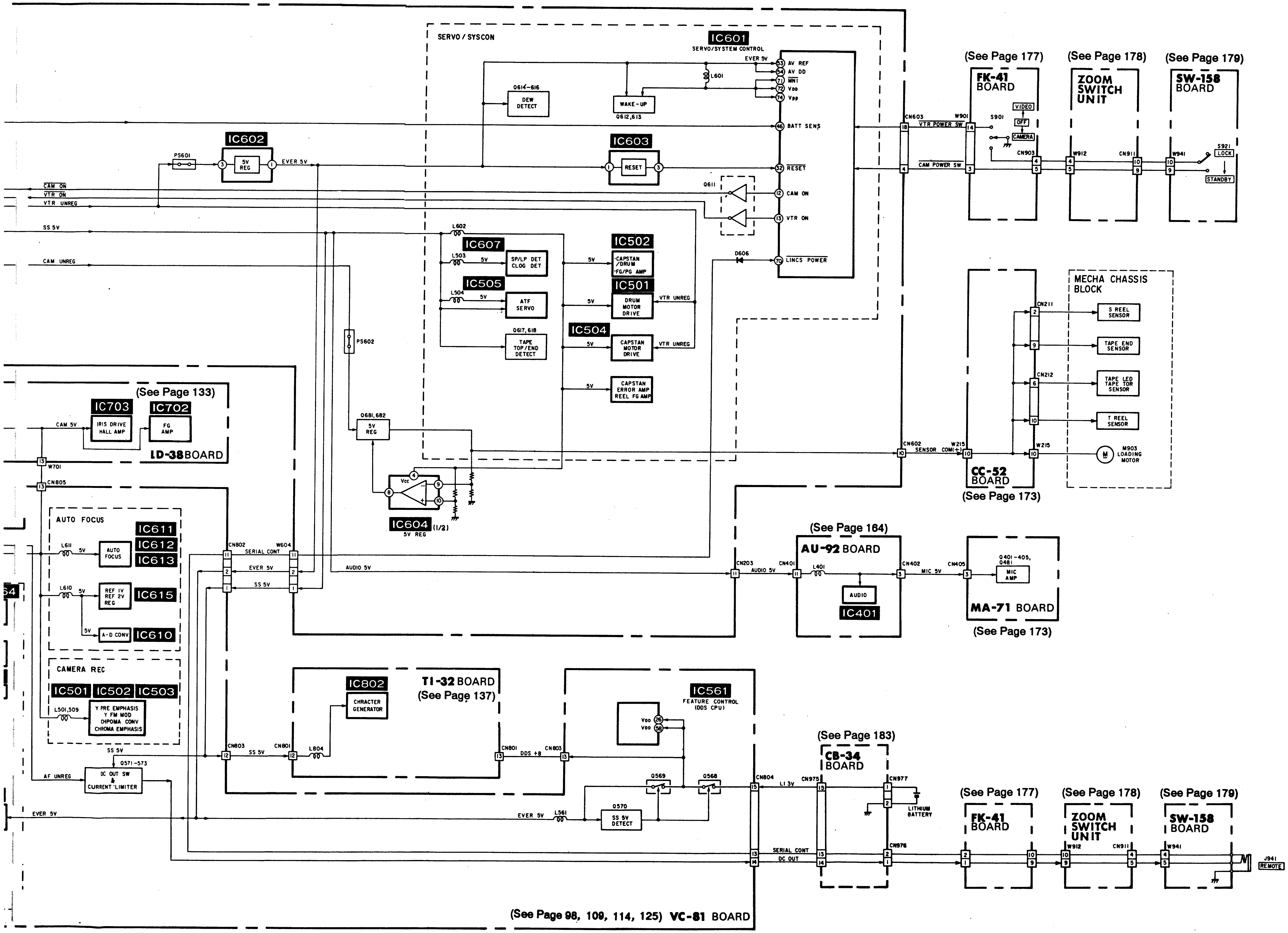
09



2.8Vp-p
H
IC951 ⑪
2Vp-p
H
IC951 ⑭
RV951
F REQ
RV953
CONTRAST
Q951
VIDEO OUT
8Vp-p
H
Q954 Ⓔ
Q952
H.OUT
Q953
HOLD DOWN
C961
H SIZE
T951 FBT
EVF +5V
D953
DUMPER
RV954
FOCUS
RV955
BRIGHT
L953
(HLC)
1.8Vp-p
V
IC951 ⑤
1.8Vp-p
V
IC951 ③
H OSC
H DRIVE
KG MIX
V OUT
RV952
V SIZE
W951
G1
H
H
HV
G3
G2
V901
PICTURE TUBE
CN953
DH2
DH1
EVF 5V
L953
HLC
L901
DEFLECTION YOKE
H
V
CN952
DV1
DV2

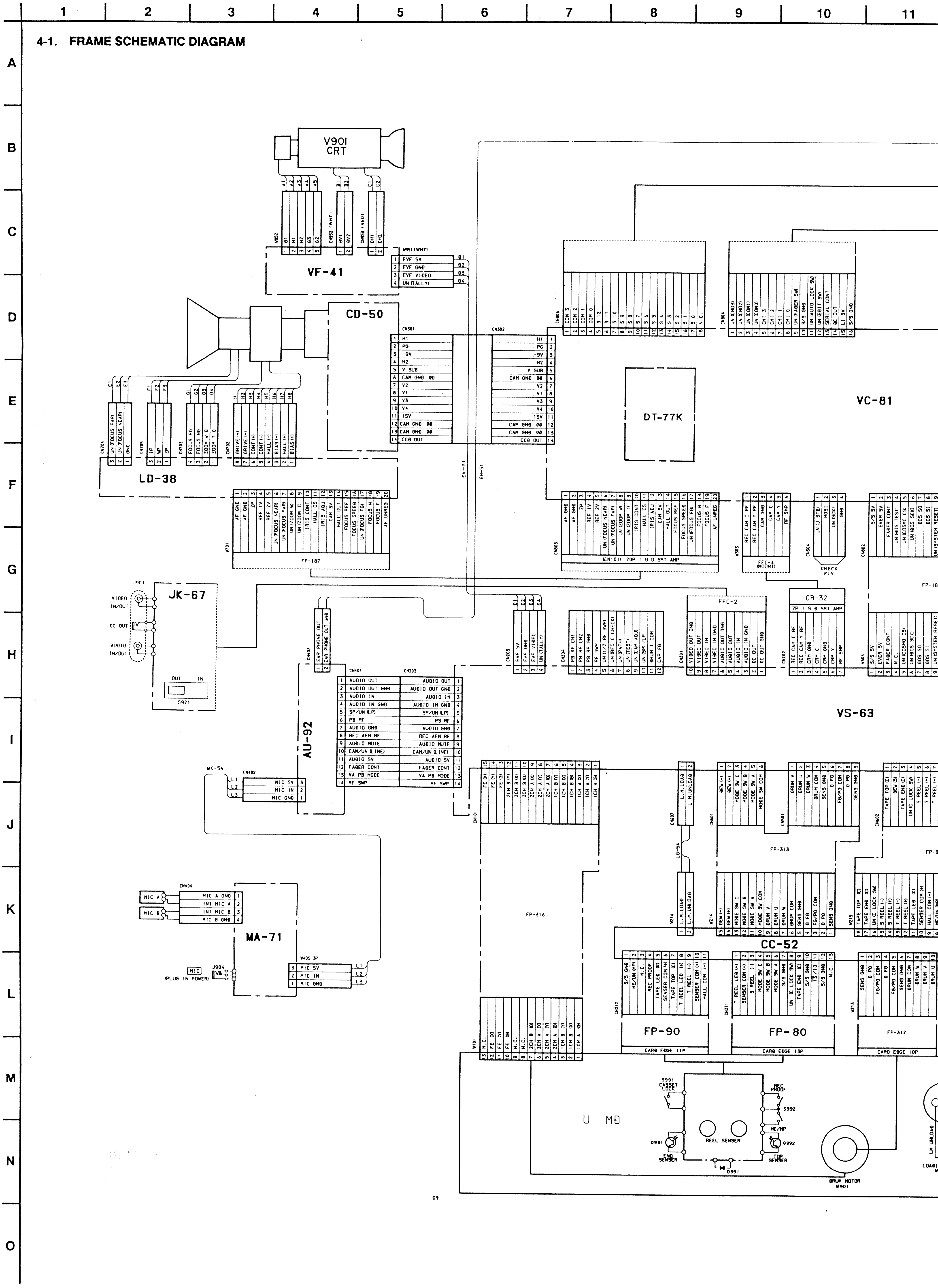
3-15. POWER BLOCK DIAGRAM


(See Page 151)
JK-67 BOARD
J901(1/3) RFU DC OUT
W201
DC OUT
CN201
VS-63 BOARD (See Page 140, 152, 155)
Q201,202 CURRENT LIMITER
Q191-193 FLYING ERASE OSC
VIDEO
IC101 IC102
REC/PB AMP
VIDEO 5V
VF-41 BOARD
EVF
CN951
CN205
EVF 5V
(See Page 189)
L228
PS601
DD-31 BOARD (See Page 193)
RV101 BATT SENS
CN002
W605
BATT SENSE
CAM ON
VTR ON
VTR UNREG
EVF 5V
REG 5V
VIDEO 5V
CAM UNREG
SS 5V
F103 VTR UNREG L103
L113
Q107 PWM SWITCHING
D104,L114 FLY WHEEL
L115
L116
Q101(1/2)
IC101 (1/2) VTR DC-DC CONVERTER
Vcc A
SWITCHING DRIVE
IC102 DRUM PWM MOD
RV103 VIDEO 5V
V REF
TRIANGLE OSC
UVLO
SHORT CIRCUIT PROTECT
V REF (2.5V)
OSC
RV105 F OSC
MAIN BATTERY
J101
Q205,220,241, Q237-239
REC Y REC C AMP
Q236
L229
IC205
SS 5V
PB+POWER SAVE
PB
PB+LINE REC
EXPANTION PORT
Q233-235, Q245-249
PB Y PB C AMP
Q232
Q256
IC201
·INPUT SELECT ·AGC ·VIDEO OUT
Q207
IC202
CCD COMB FILTER
Q226
IC203
Y/C PROCESS
VIDEO
(See Page
IC701
FOCUS ZOOM MOTOR DRIVE
AF UNREG
CAM 5V
IC703
IRIS DRIVE HALL AMP
IC702
FG AMP
LD-38
W701
CN805
F101 CAM UNREG L101
L104
CN003
AF UNREG
CAM 5V
W801
Q102 PWM SWITCHING
D101,L105 FLY WHEEL
L106
EVF 5V
IC101 (1/2) CAMERA DC-DC CONVERTER
Vcc B,C
OSC
ULVO
1/2
F102 MOTOR UNREG
Q104~106 DRUM/CAPSTAN PWM POWER AMP
RV102 CAM 5V
Q108 PROTECTION DETECT
DRUM/CAPSTAN PWM POWER AMP
Vcc D
T101
D103(1/2) RECT
D102 RECT
D103(1/2) RECT
L107
L108
L109
23V
15V
-9V
Q103 PWM SWITCHING
RV104 CAM 15V
V REF
L251
CAMERA
IC251 5V(A) CHROMA PROCESS
IC253 5V(A) CLAMP & BLANKING
IC252 5V(A) EVR
IC141 L142,143 5V(D) SYNC GENERATOR
IC182 IC183 L181,182 5V(D) CCD DELAY
IC181 5V(A) MATRIX
Q131,132 V SUB REG
L401
L402
L403
L404
IC363 IC364 L362 5V AUTO WHITE BALANCE
IC301 L303 5V ENCODER
IC302 L301 5V EVR
AUTO FOCUS
IC611 IC612 IC613
L611 5V AUTO FOCUS
L610 5V REF 1V REF 2V REG
IC615
5V A-D CONV IC610
CAMERA REC
IC501 IC502 IC503
L501,509 Y PRE EMPHASIS Y FM MOD CHPOMA CONV CHROMA EMPHASIS
SS 5V
Q571-573 DC OUT SW & CURRENT LIMITER
AF UNREG
EVER 5V
IC361 EVR/AUTO WHITE BALANCE CPU
CD-50 BOARD (See Page 129)
IC901 CCD IMAGER
CN301
CN302
V SUB
-9V
15V
(See Page 196)
DT-77K BOARD
L101 5V(A) -9V 5V(D) L102 15V
· SIGNAL SEPALATION · AGC/IRIS CONTROL · TIMING GENERATOR · V DRIVE


SERVO / SYSCON
IC601
SERVO/SYSTEM CONTROL
EVER 5V
AV REF
AV DD
MNI
VDD
VPP
L601
Q614–616
DEW DETECT
WAKE-UP
Q612,613
BATT SENS
IC602
PS601
5V REG
EVER 5V
IC603
RESET
Q611
CAM ON
VTR ON
VTR UNREG
SS 5V
CAM UNREG
D606
LINCS POWER
L602
IC607
L503
5V
SP/LP DET
CLOG DET
IC502
CAPSTAN /DRUM FG/PG AMP
IC501
DRUM MOTOR DRIVE
VTR UNREG
IC505
L504
ATF SERVO
Q617,618
TAPE TOP/END DETECT
IC504
CAPSTAN MOTOR DRIVE
CAPSTAN ERROR AMP REEL FG AMP
PS602
Q681,682
5V REG
Vcc
IC604 (1/2)
5V REG
(See Page 133)
IC703
IRIS DRIVE HALL AMP
IC702
FG AMP
CAM 5V
LD-38 BOARD
W701
CN805
AUTO FOCUS
IC611
IC612
IC613
L611
AUTO FOCUS
L610
REF 1V REF 2V REG
IC615
A-D CONV
IC610
CN802
W604
SERIAL CONT
EVER 5V
SS 5V
AUDIO 5V
CAMERA REC
IC501
IC502
IC503
L501,509
Y PRE EMPHASIS Y FM MOD CHROMA CONV CHROMA EMPHASIS
SS 5V
Q571–573
AF UNREG
DC OUT SW & CURRENT LIMITER
EVER 5V
IC802
CHRACTER GENERATOR
TI-32 BOARD
(See Page 137)
CN803
CN801
L804
DDS +8
IC561
FEATURE CONTROL (DDS CPU)
VDD
Q569
Q568
Q570
SS 5V DETECT
L561
CN804
L1 3V
SERIAL CONT
DC OUT
(See Page 98, 109, 114, 125) VC-81 BOARD
CN603
W901
VTR POWER SW
CAM POWER SW
(See Page 177)
FK-41 BOARD
S901
VIDEO
OFF
CAMERA
CN903
(See Page 178)
ZOOM SWITCH UNIT
W912
CN911
(See Page 179)
SW-158 BOARD
W941
S921
LOCK
STANDBY
CC-52 BOARD
(See Page 173)
CN211
CN212
W215
CN602
SENSOR COM
MECHA CHASSIS BLOCK
S REEL SENSOR
TAPE END SENSOR
TAPE LED TAPE TOP SENSOR
T REEL SENSOR
M903 LOADING MOTOR
(See Page 164)
AU-92 BOARD
CN203
AUDIO 5V
CN401
L401
AUDIO
IC401
CN402
MIC 5V
CN405
Q401–405, Q481
MIC AMP
MA-71 BOARD
(See Page 173)
(See Page 183)
CB-34 BOARD
CN975
CN977
LITHIUM BATTERY
CN976
(See Page 177)
FK-41 BOARD
(See Page 178)
ZOOM SWITCH UNIT
W912
CN911
(See Page 179)
SW-158 BOARD
W941
J941
REMOTE

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM


1
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3
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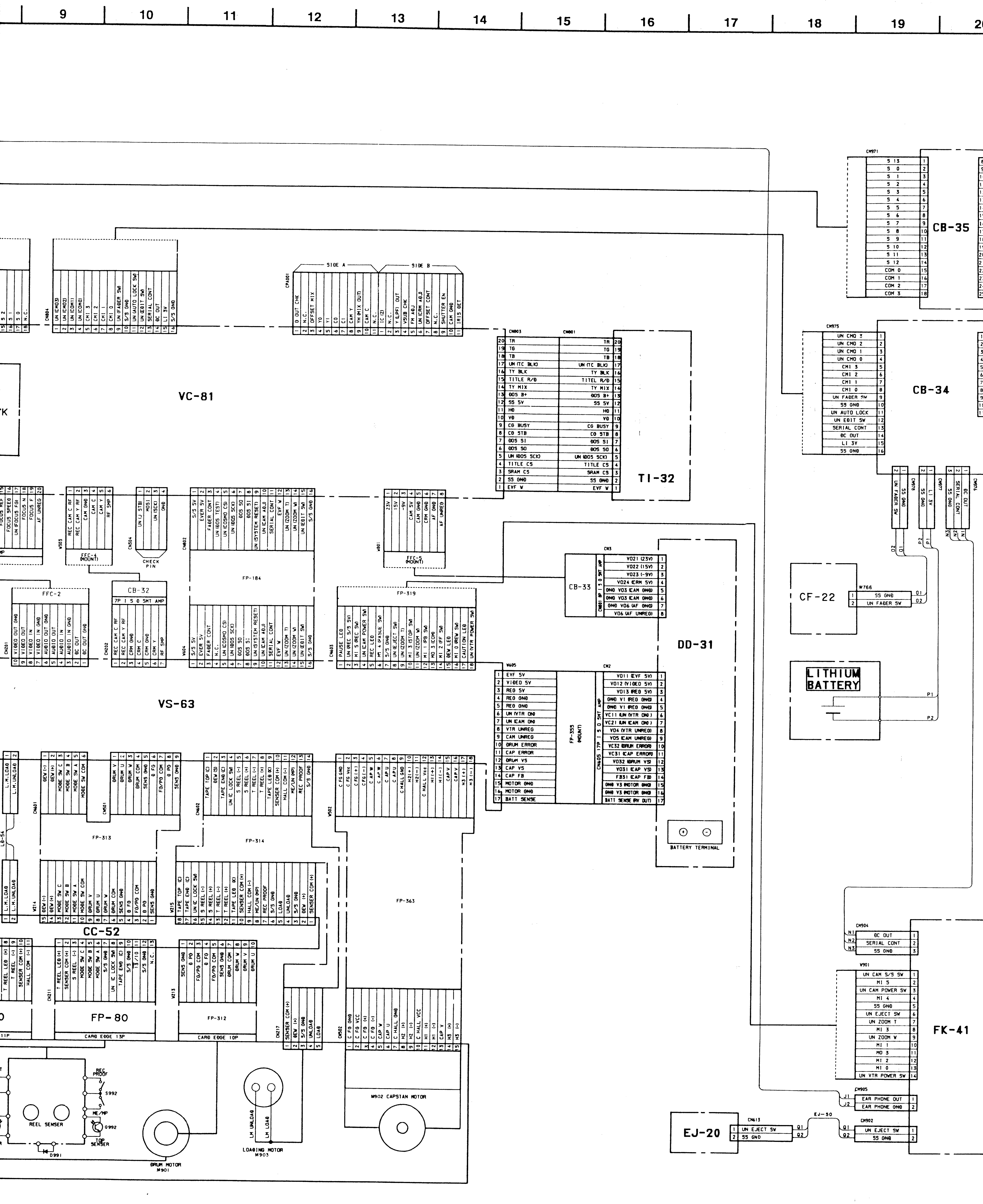
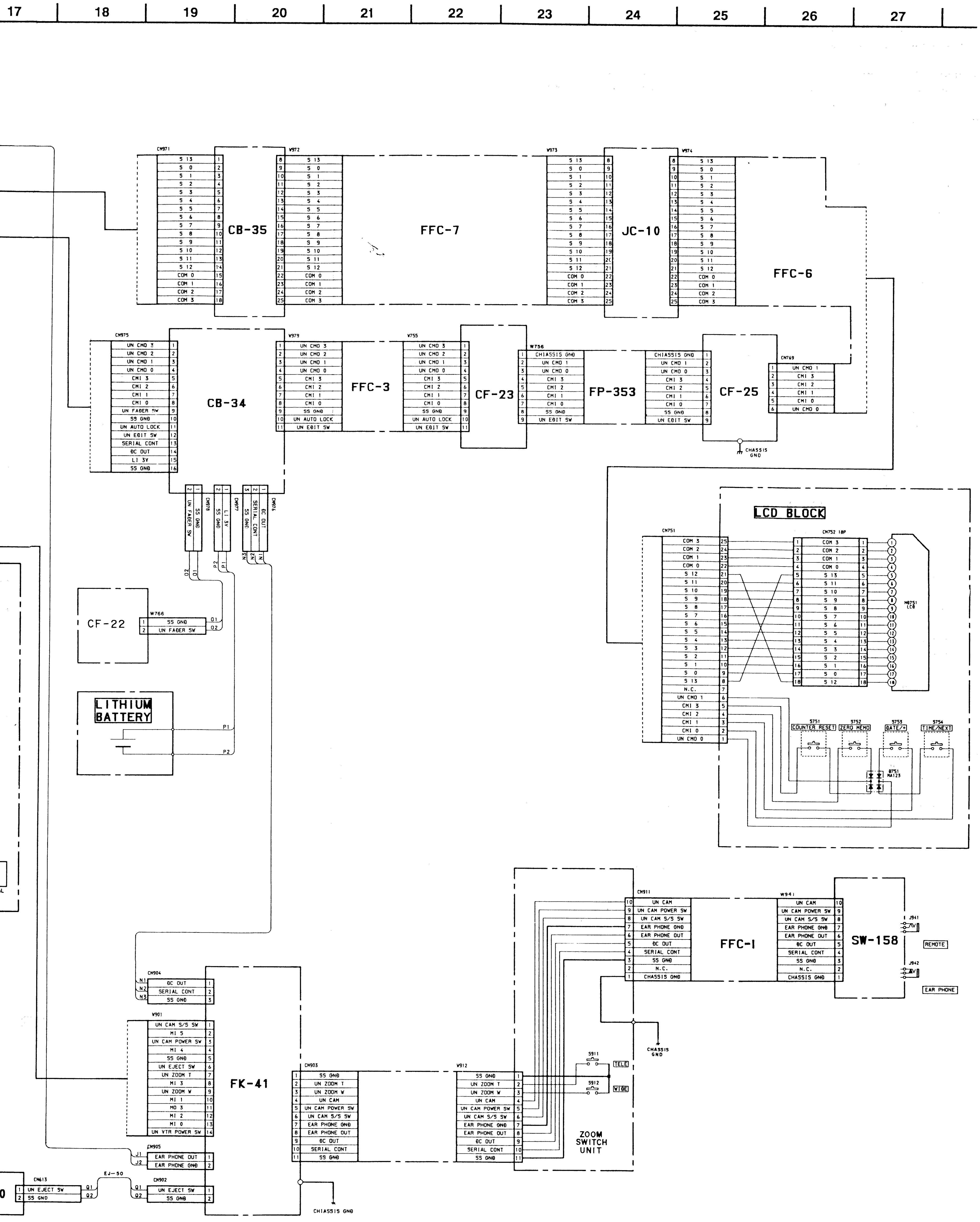
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
V901
CRT
VF-41
CD-50
LD-38
JK-67
AU-92
MA-71
DT-77K
VC-81
VS-63
CC-52
FP-90
FP-80
FP-187
FP-316
FP-313
FP-312
FFC-2
FFC-4 (MOUNT)
CB-32
CHECK PIN
LD-54
EV-51
EH-51
MC-54
CN301
CN302
CN401
CN203
CN402
CN404
CN403
CN101
CN805
CN806
CN804
CN205
CN204
CN201
CN202
CN407
CN501
W701
W101
W405 3P
J901
J904
S921
VIDEO IN/OUT
DC OUT
AUDIO IN/OUT
OUT
IN
MIC A
MIC B
MIC
(PLUG IN POWER)
CN101 20P 1 0 0 SMT AMP
7P 1 S 0 SMT AMP
CARD EDGE 11P
CARD EDGE 13P
CARD EDGE 10P
U MD
S991 CASSET LOCK
REC PROOF
S992
ME/MP
Q991
END SENSER
REEL SENSER
Q992
TOP SENSER
D991
DRUM MOTOR M901



9
10
11
12
13
14
15
16
17
18
19
VC-81
VS-63
TI-32
DD-31
CB-35
CB-34
CB-33
CB-32
CF-22
LITHIUM BATTERY
CC-52
FP-80
FP-184
FP-319
FP-313
FP-314
FP-312
FP-363
FP-355 (MOUNT)
FFC-2
FFC-4 (MOUNT)
FFC-5 (MOUNT)
CHECK PIN
SIDE A
SIDE B
FK-41
EJ-20
EJ-30
BATTERY TERMINAL
CARD EDGE 13P
CARD EDGE 10P
REEL SENSER
REC PROOF
S992
ME/MP
Q992
TOP SENSER
D991
DRUM MOTOR M901
LOADING MOTOR M903
LM UNLOAD
LM LOAD
M902 CAPSTAN MOTOR
LD-54
CN971
CN975
CN803
CN801
CN3
CN2
CN904
CN905
CN902
CN613
W766
W605
W901


17
18
19
20
21
22
23
24
25
26
27
CN971
V972
CB-35
FFC-7
V973
JC-10
V974
FFC-6
S 13
S 0
S 1
S 2
S 3
S 4
S 5
S 6
S 7
S 8
S 9
S 10
S 11
S 12
COM 0
COM 1
COM 2
COM 3
CN975
CB-34
V979
FFC-3
V755
CF-23
W756
FP-353
CF-25
CN769
UN CMD 3
UN CMD 2
UN CMD 1
UN CMD 0
CMI 3
CMI 2
CMI 1
CMI 0
UN FADER SW
SS GND
UN AUTO LOCK
UN EDIT SW
SERIAL CONT
DC OUT
LI 3V
CHASSIS GND
CN978
CN977
CN976
CF-22
W766
LITHIUM BATTERY
P1
P2
LCD BLOCK
CN751
CN752 18P
M8751 LCD
N.C.
S751 COUNTER RESET
S752 ZERO MEMO
S753 DATE/+
S754 TIME/NEXT
D751 MA123
CN911
FFC-1
W941
SW-158
UN CAM
UN CAM POWER SW
UN CAM S/S SW
EAR PHONE GND
EAR PHONE OUT
J941
REMOTE
J942
EAR PHONE
CN904
V901
FK-41
MI 5
MI 4
UN EJECT SW
UN ZOOM T
MI 3
UN ZOOM W
MI 1
MD 3
MI 2
MI 0
UN VTR POWER SW
CN903
V912
S911
TELE
S912
WIDE
ZOOM SWITCH UNIT
CN905
CN613
EJ-50
CN902
CHASSIS GND

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- —— : indicated a lead wire mounted on the conductor side.
- ■ : Parts mounted on the conductor side.
- ▨ : Pattern from the side which enables seeing. } The inner two layers' patterns are not indicated.
- ▨ : Pattern of the rear side.*
- Circled numbers refer to waveforms.*
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- ● : Through hole

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

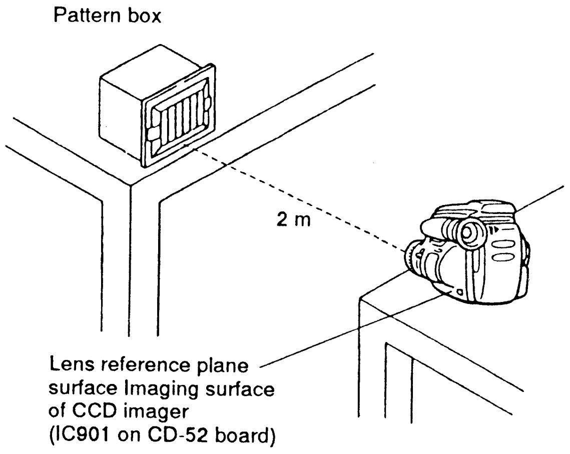
- **For schematic diagrams.**
- Caution when replacing chip parts. New parts must be attached after removal of chip. Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted. Chip resistor are 1/16W unless otherwise noted. kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF. 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repeair.*
- —— : B+ Line.*
- - - - : B– Line*.
- ⇒ : IN/OUT direction of (+, –) B LINE.*
- Circled numbers refer to waveforms.*

Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- **Measuring conditions voltage value and waveform. (CAMERA, DIGITAL TITLE block)**
- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

1. Connection


Pattern box
2 m
Lens reference plane surface Imaging surface of CCD imager (IC901 on CD-52 board)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

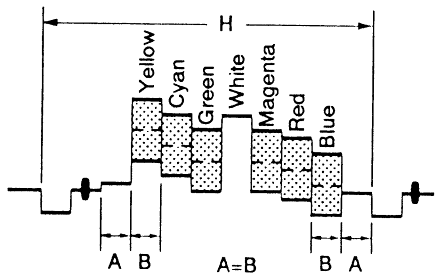

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A

Fig. a (Video output terminal output waveform)

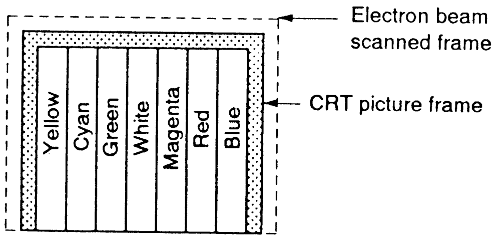

Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

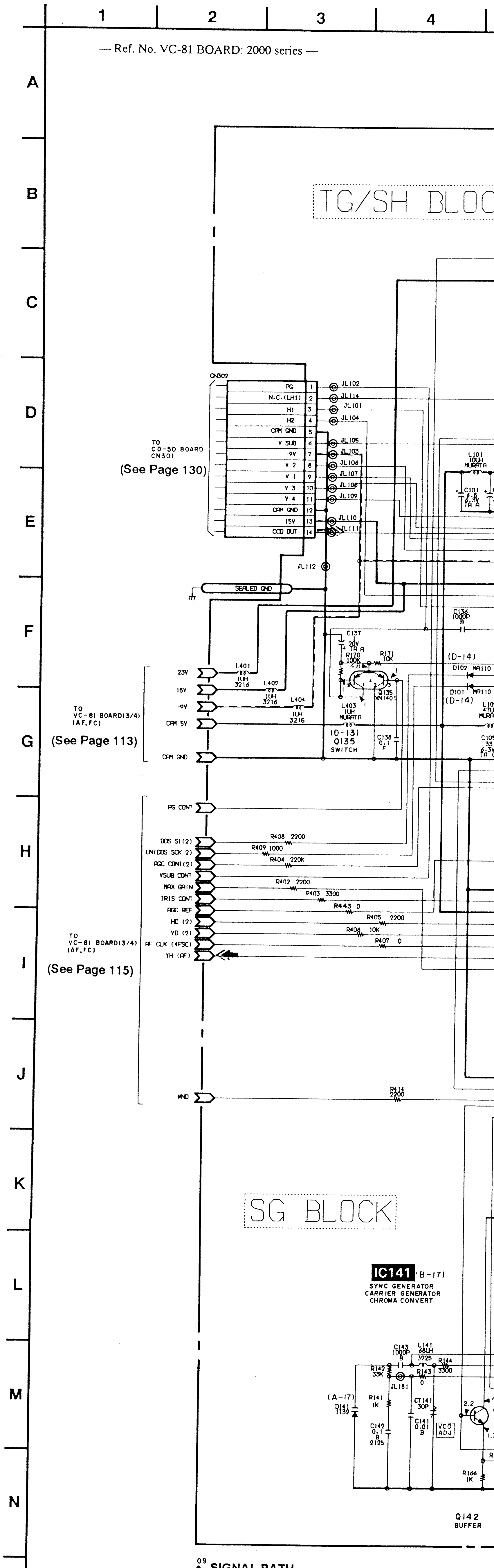
Fig. b (Picture on monitor TV)

(VIDEO, SERVO/SYSTEM CONTROL, MODE CONTROL, AUDIO, VIEW FINDER block)

- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

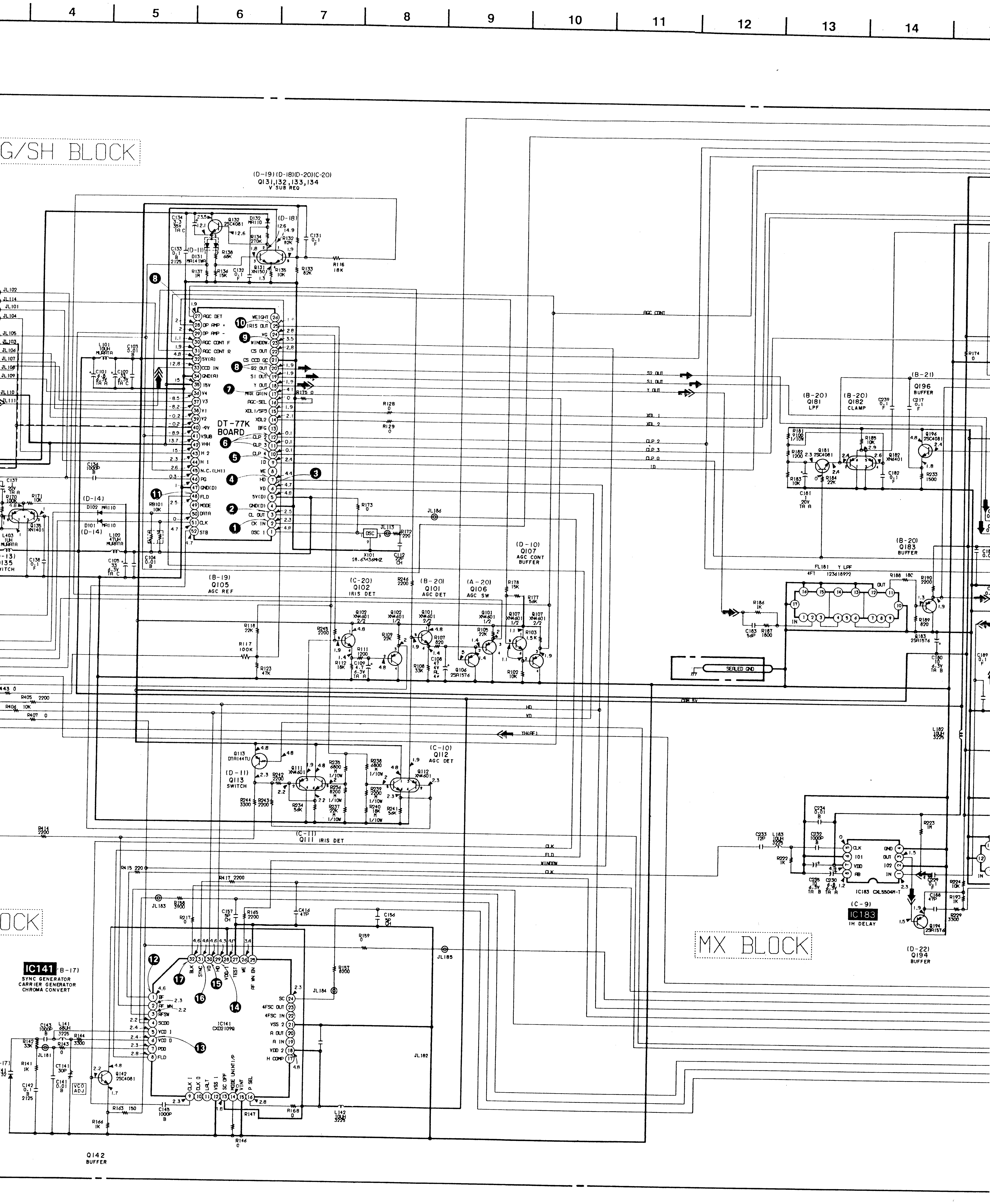
- *: indicated by the color red.

VC-81 (CAMERA) SCHEMATIC DIAGRAM

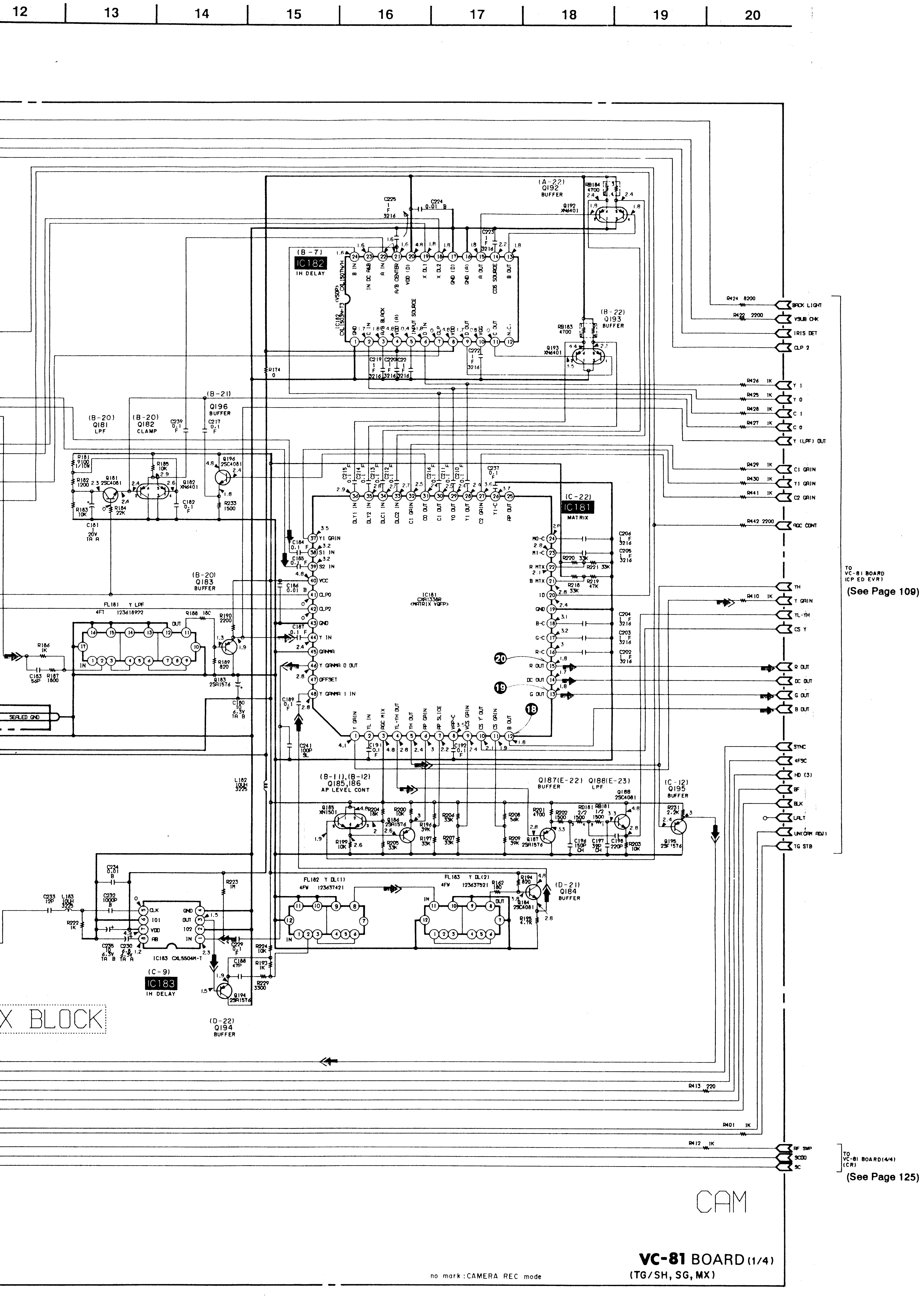

1
2
3
4
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
— Ref. No. VC-81 BOARD: 2000 series —
TG/SH BLOC
CN502
PG
N.C.(LH1)
H1
H2
CPH GND
V SUB
-9V
V 2
V 1
V 3
V 4
CPH GND
15V
CCD OUT
JL102
JL114
JL101
JL104
JL105
JL103
JL106
JL107
JL108
JL109
JL110
JL111
JL112
TO CD-50 BOARD CN301
(See Page 130)
SEALED GND
L101 10UH MURATA
C101
C134 1000P B
C137 20V 1 TA A
R170 100K
R171 10K
Q135 XN1401
(D-13) Q135 SWITCH
C138 0.1 F
L401 1UH 3216
L402 1UH 3216
L403 1UH MURATA
L404 1UH 3216
(D-14)
D102 MA110
D101 MA110
(D-14)
23V
15V
-9V
CPH 5V
CPH GND
TO VC-81 BOARD(3/4) (AF,FC)
(See Page 113)
PG CONT
DDS SI(2)
UNI(DDS SCK 2)
AGC CONT(2)
VSUB CONT
MAX GAIN
IRIS CONT
AGC REF
HD (2)
VD (2)
AF CLK (4FSC)
YH (AF)
R408 2200
R409 1000
R404 220K
R402 2200
R403 3300
R443 0
R405 2200
R406 10K
R407 0
TO VC-81 BOARD(3/4) (AF,FC)
(See Page 115)
WND
R414 2200
SG BLOCK
IC141 (B-17)
SYNC GENERATOR CARRIER GENERATOR CHROMA CONVERT
C143 1000P B
L141 68UH 3225
R144 3300
R142 33K
R143 0
JL181
(A-17)
D141 1T32
R141 1K
CT141 30P
C141 0.01 B
VCO ADJ
C142 0.1 B 2125
R166 1K
Q142 BUFFER

• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA/DATA
REC	➡	⇛	⇛
PB			


4
5
6
7
8
9
10
11
12
13
14
G/SH BLOCK
(D-19)(D-18)(D-20)(C-20)
Q131,132,133,134
V SUB REG
DT-77K
BOARD
AGC DET
OP AMP +
OP AMP -
AGC CONT F
AGC CONT R
5V(A)
CCD IN
GND(A)
15V
V4
V3
V1
V2
-9V
VSUB
VHH
H 2
H 1
N.C.(LH1)
PG
GND(D)
FLD
MODE
DATA
CLK
STB
WEIGHT
IRIS OUT
VG
WINDOW
CS OUT
CS CCD GC
S2 OUT
S1 OUT
Y OUT
MAX GAIN
AGC-SEL
XOL1/SP3
XOL2
BFG
CLP 2
CLP 3
CLP 4
ID
WE
HD
VD
5V(D)
GND(D)
CL OUT
CK IN
OSC 1
X101
28.6363MHZ
(B-19)
Q105
AGC REF
(C-20)
Q102
IRIS DET
(B-20)
Q101
AGC DET
(A-20)
Q106
AGC SW
(D-10)
Q107
AGC CONT
BUFFER
(D-11)
Q113
SWITCH
(C-10)
Q112
AGC DET
(C-11)
Q111 IRIS DET
AGC CONT
S2 OUT
S1 OUT
Y OUT
XOL 1
XOL 2
CLP 2
CLP 3
CLP 0
ID
(B-20)
Q181
LPF
(B-20)
Q182
CLAMP
(B-21)
Q196
BUFFER
(B-20)
Q183
BUFFER
FL181 Y LPF
SEALED GND
CCD 5V
HD
VD
YH(AE)
CLK
FLD
WINDOW
CLK
IC183 CXL5504M-T
(C-9)
IC183
1H DELAY
(D-22)
Q194
BUFFER
MX BLOCK
OCK
IC141 (B-17)
SYNC GENERATOR
CARRIER GENERATOR
CHROMA CONVERT
IC141
CXD2109Q
Q142
BUFFER
VCO ADJ
JL181
JL182
JL183
JL184
JL185
JL186
(D-14)
Q135
WITCH

EO SIGNAL		AUDIO SIGNAL
	Y/CHROMA/DATA	
⇨	➡≫	


12
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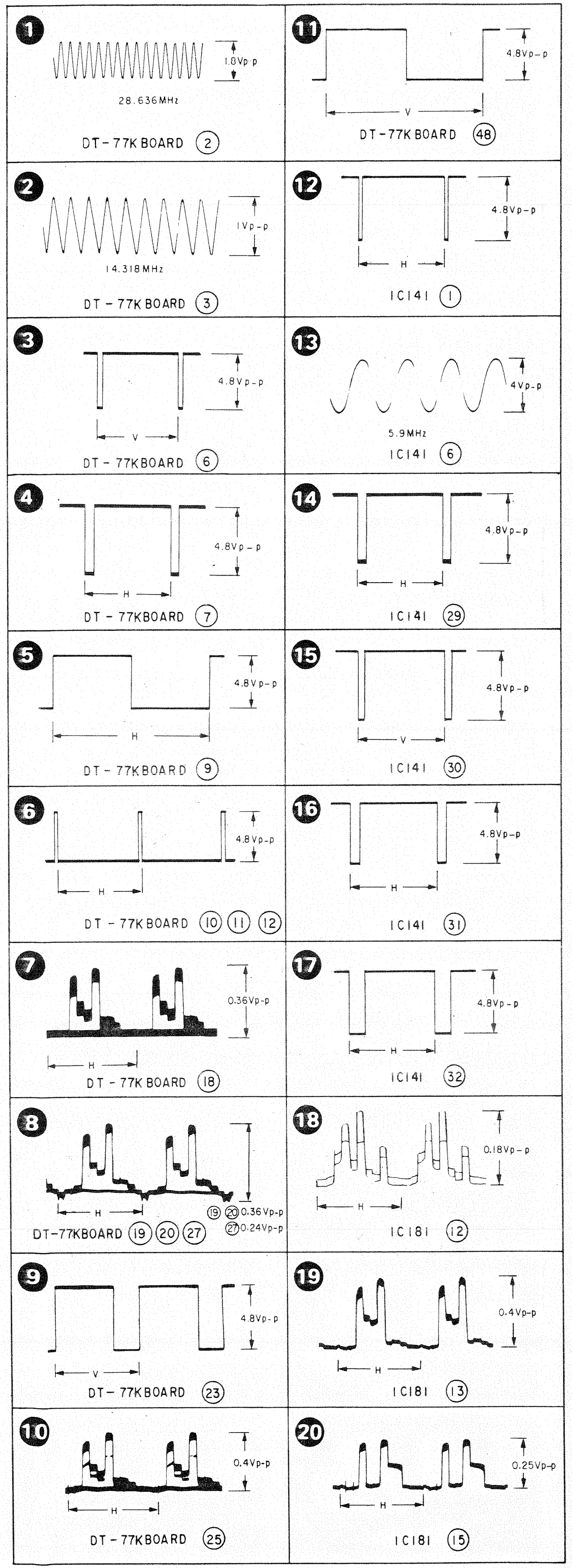
20
IC182 1H DELAY
IC181 MATRIX
IC183 1H DELAY
Q181 LPF
Q182 CLAMP
Q183 BUFFER
Q184 BUFFER
Q185,186 AP LEVEL CONT
Q187 BUFFER
Q188 LPF
Q192 BUFFER
Q193 BUFFER
Q194
Q195 BUFFER
Q196 BUFFER
X BLOCK
TO VC-81 BOARD (CP ED EVR)
(See Page 109)
TO VC-81 BOARD(4/4) (CR)
(See Page 125)
CAM
no mark : CAMERA REC mode
VC-81 BOARD (1/4)
(TG/SH, SG, MX)

VC-81	BOARD
D101	D-14
D102	D-14
D131	D-11
D132	D-18
D141	A-17
D301	B-29
D303	G-1
D361	E-5
D362	E-25
D561	I-24
D562	I-5
D611	G-18
IC141	B-17
IC181	C-22
IC182	B-7
IC183	C-9
IC251	D-26
IC252	E-3
IC301	C-28
IC302	F-3
IC361	G-24
IC362	F-25
IC363	F-22
IC364	H-22
IC501	G-27
IC502	G-28
IC503	I-28
IC561	H-7
IC610	G-10
IC611	F-20
IC612	I-17
IC613	H-19
IC615	F-16
IC616	G-17
Q101	B-20
Q102	C-20
Q106	A-20
Q107	D-10
Q111	C-11
Q112	C-10
Q113	D-11
Q131	D-19
Q132	D-18
Q135	D-13
Q142	A-16
Q181	B-20
Q182	B-20
Q183	B-20
Q184	D-21
Q185	B-11
Q186	B-12
Q187	E-22
Q188	E-23
Q189	C-24
Q190	C-25
Q191	B-25
Q192	A-22
Q193	B-22
Q194	D-22
Q195	C-12
Q196	B-21
Q255	E-28
Q257	D-27
Q302	D-29
Q303	E-1
Q304	E-1
Q307	E-2
Q310	F-29
Q311	F-2
Q312	F-29
Q313	F-2
Q314	F-27
Q315	F-2
Q361	E-5
Q362	F-6
Q363	G-10
Q364	F-9
Q365	G-20
Q367	H-21
Q368	F-6
Q501	G-1
Q502	H-1
Q503	G-4
Q504	J-1
Q505	I-26
Q508	H-2
Q509	J-29
Q561	I-10
Q562	J-22
Q563	H-21
Q564	J-22
Q565	H-23
Q566	I-23

VC-81 BOARD (1/4)

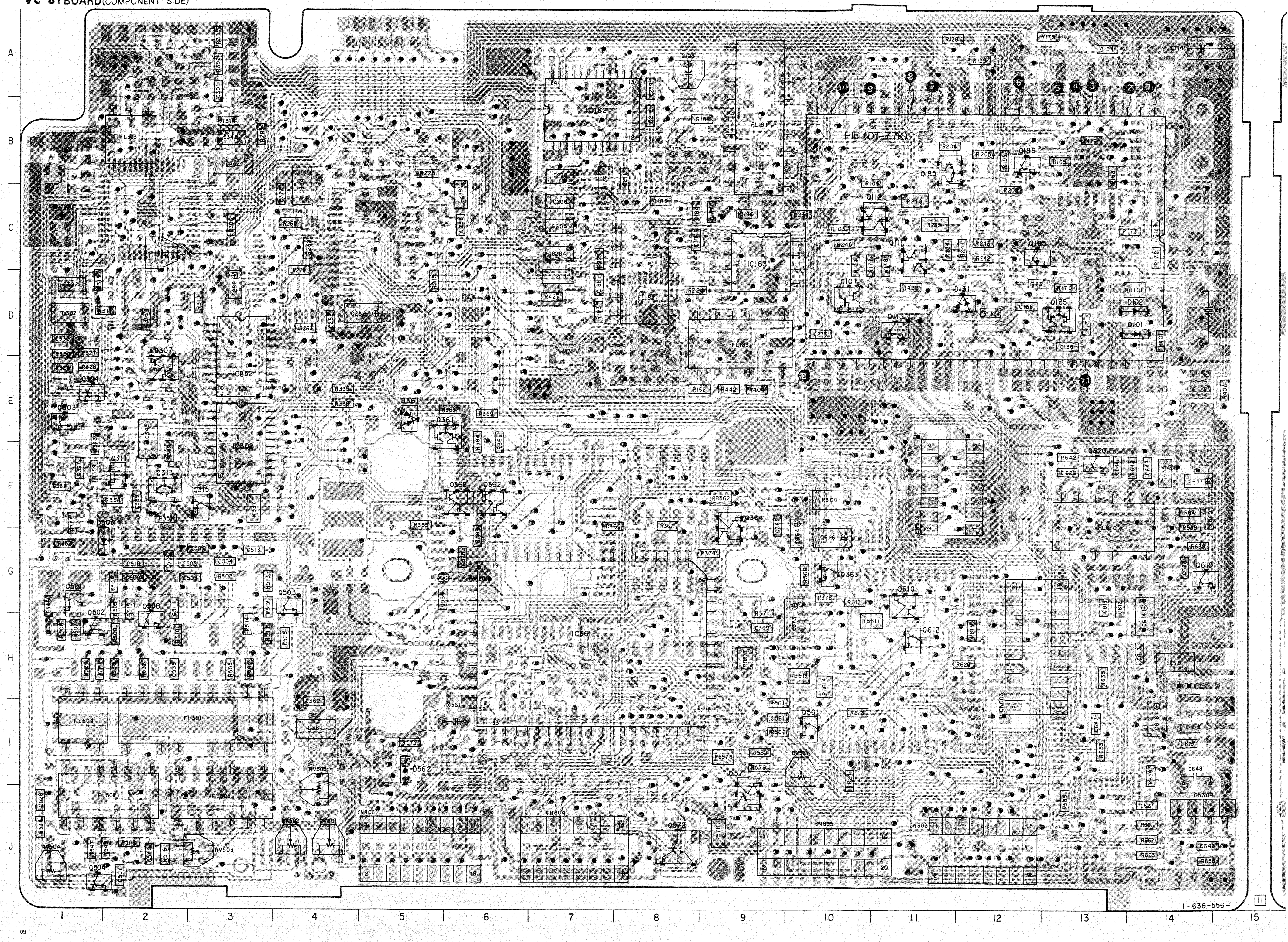


VC-81 (CAMERA), CB-33 (RELAY), CB-35 (RELAY), JC-10 (RELAY) PRINTED WIRING BOARDS

— Ref. No. VC-81 BOARD: 2000, CB-33 BOARD: 7000, CB-35 BOARD: 4000, JC-10 BOARD: 3000 series —

- **For printed wiring boards.**
- VC-81, CB-33 boards are the printed wiring board which has four layers structure but inner two layers' patterns are omitted.

VC-81 BOARD (COMPONENT SIDE)



A
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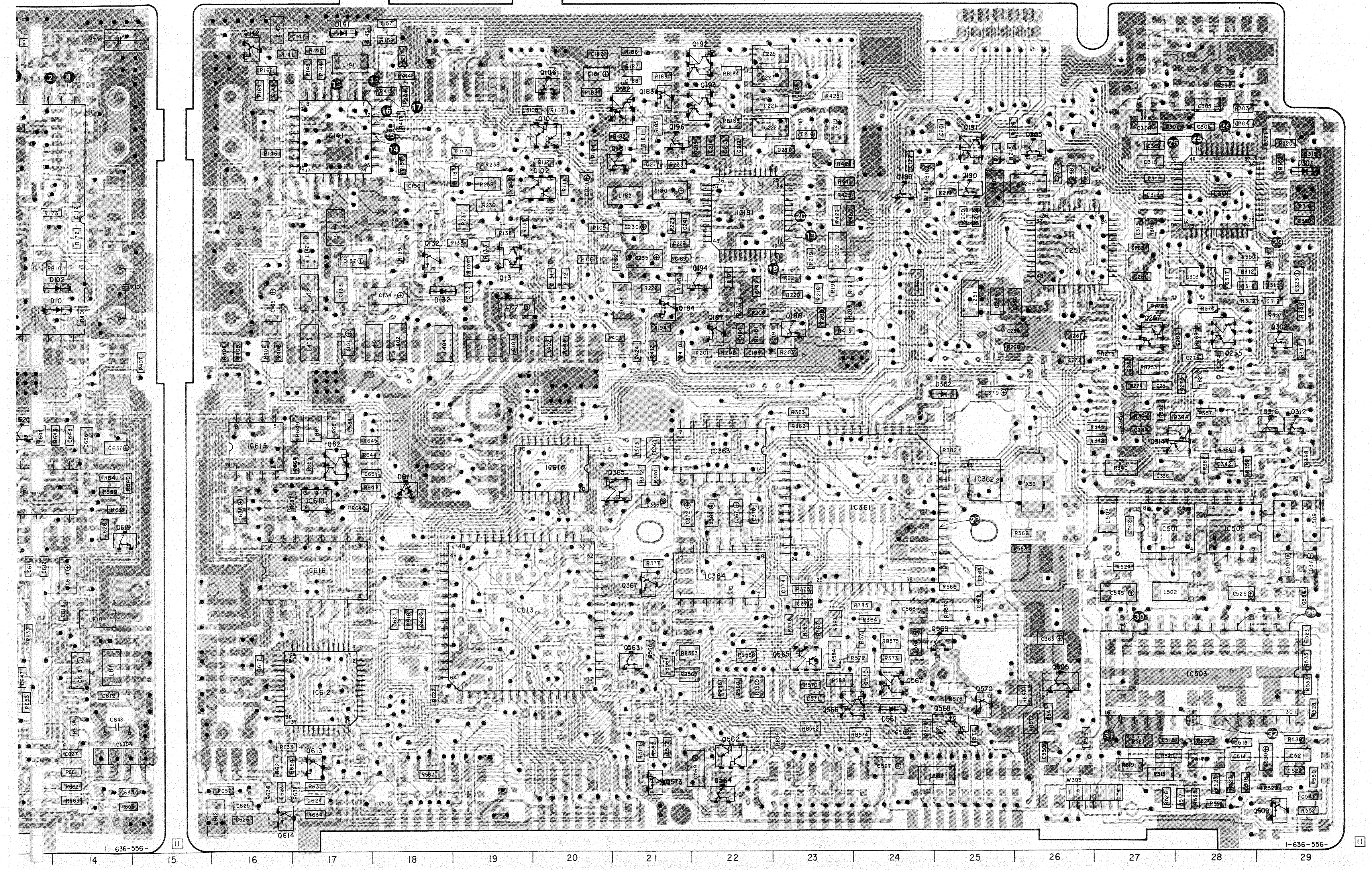
12
13
14
15
HIC (DT-77K)
IC182
IC183
IC181
IC252
IC302
IC561
FL501
FL502
FL503
FL504
FL610
CN301
CN302
CN303
CN304
CN501
CN502
CN503
CN504
RV501
RV502
RV503
RV504
RV505
X561
X101
1-636-556-11
09

VC-81 BOARD (CONDUCTOR SIDE)


1-636-556-
11
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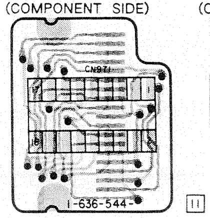
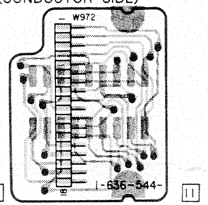
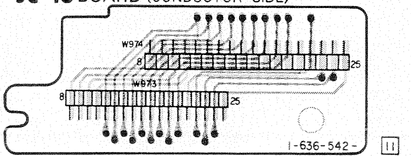
CB-35 BOARD (COMPONENT SIDE)


CN972
1-636-544-
11

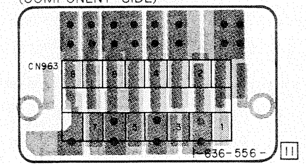
CB-35 BOARD (CONDUCTOR SIDE)


W972
1-636-544-
11

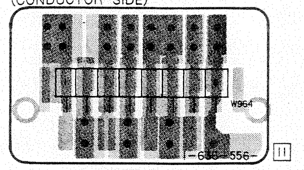
JC-10 BOARD (CONDUCTOR SIDE)


W974
W973
25
8
1-636-542-
11

CB-33 BOARD (COMPONENT SIDE)


CN963
1-636-556-
11

CB-33 BOARD (CONDUCTOR SIDE)

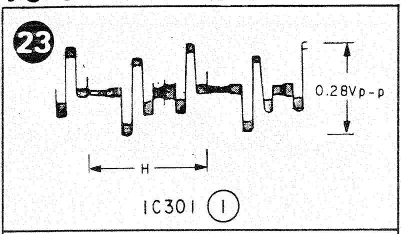

W964
1-636-556-
11

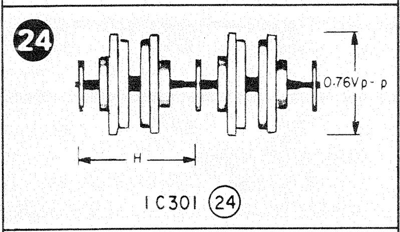
VC-81 (CAMERA), CB-33 (RELAY), CB-35 (RELAY), JC-10 (RELAY) PRINTED WIRING BOARDS

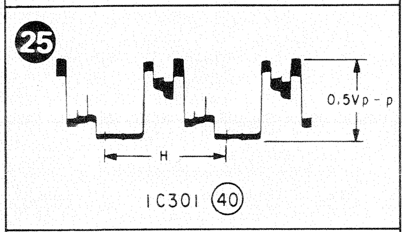
— Ref. No. VC-81 BOARD: 2000, CB-33 BOARD: 7000, CB-35 BOARD: 4000, JC-10 BOARD: 3000 series —

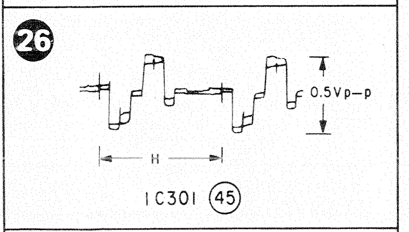
- **For printed wiring boards.**
- VC-81, CB-33 boards are the printed wiring board which has four layers structure but inner two layers' patterns are omitted.

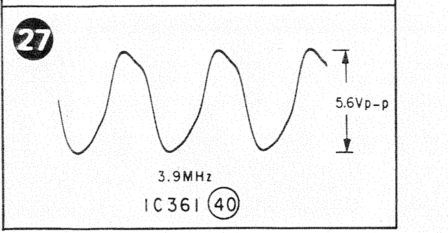
VC-81 BOARD (2/4)







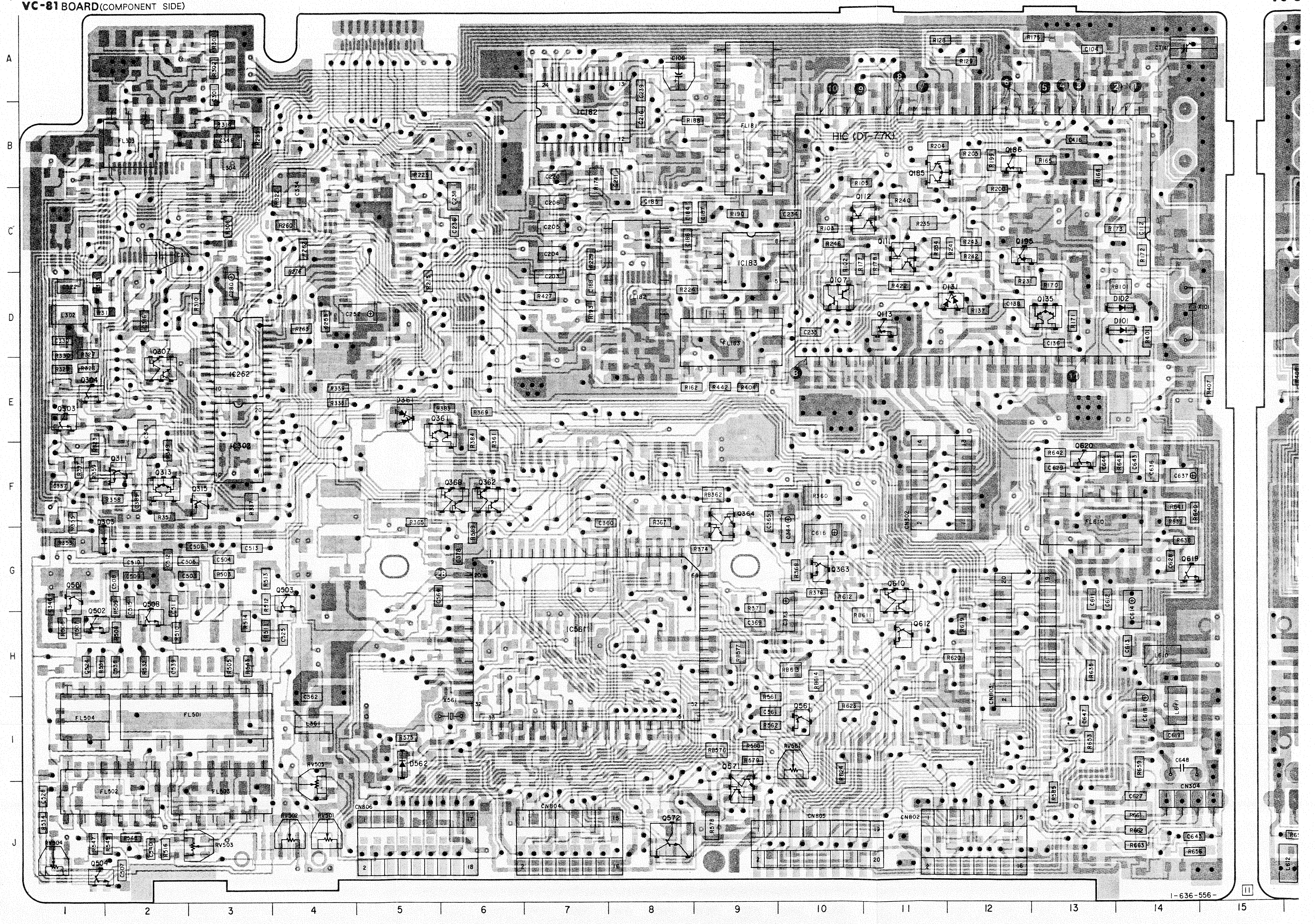




VC-81 BOARD

D101	D-14
D102	D-14
D131	D-11
D132	D-18
D141	A-17
D301	B-29
D303	G-1
D361	E-5
D362	E-25
D561	I-24
D562	I-5
D611	G-18
IC141	B-17
IC181	C-22
IC182	B-7
IC183	C-9
IC251	D-26
IC252	E-3
IC301	C-28
IC302	F-3
IC361	G-24
IC362	F-25
IC363	F-22
IC364	H-22
IC501	G-27
IC502	G-28
IC503	I-28
IC561	H-7
IC610	G-10
IC611	F-20
IC612	I-17
IC613	H-19
IC615	F-16
IC616	G-17
Q101	B-20
Q102	C-20
Q106	A-20
Q107	D-10
Q111	C-11
Q112	C-10
Q113	D-11
Q131	D-19
Q132	D-18
Q135	D-13
Q142	A-16
Q181	B-20
Q182	B-20
Q183	B-20
Q184	D-21
Q185	B-11
Q186	B-12
Q187	E-22
Q188	E-23
Q189	C-24
Q190	C-25
Q191	B-25
Q192	A-22
Q193	B-22
Q194	D-22
Q195	C-12
Q196	B-21
Q255	E-28
Q257	D-27
Q302	D-29
Q303	E-1
Q304	E-1
Q307	E-2
Q310	F-29
Q311	F-2
Q312	F-29
Q313	F-2
Q314	F-27
Q315	F-2
Q361	E-5
Q362	F-6
Q363	G-10
Q364	F-9
Q365	G-20
Q367	H-21
Q368	F-6
Q501	G-1
Q502	H-1
Q503	G-4
Q504	J-1
Q505	I-26
Q508	H-2
Q509	J-29
Q561	I-10
Q562	J-22
Q563	H-21
Q564	J-22
Q565	H-23
Q566	I-23
Q567	I-24
Q568	I-25
Q569	H-25
Q570	I-25
Q571	I-9
Q572	J-8
Q573	J-21
Q610	G-11
Q612	H-11
Q613	J-17
Q614	J-16
Q619	G-14
Q620	F-13
Q621	F-17

VC-81 BOARD(COMPONENT SIDE)



VC-8
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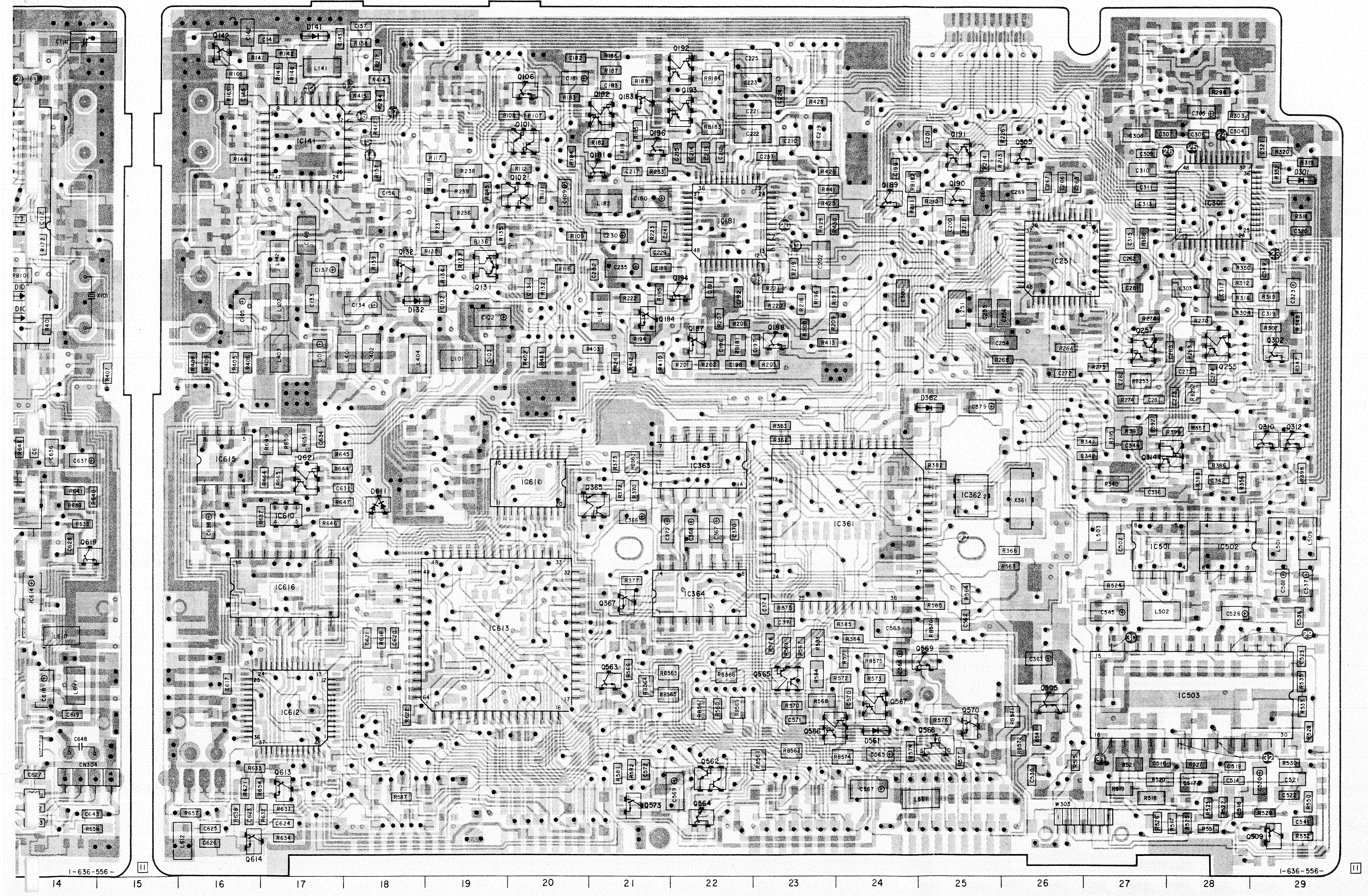
HIC (DT-77K)
IC182
IC183
IC262
IC302
IC561
FL181
FL183
FL501
FL502
FL503
FL504
FL610
CN304
CN802
CN804
CN805
CN806
Q36
Q107
Q111
Q112
Q113
Q131
Q135
Q185
Q186
Q196
Q303
Q304
Q307
Q311
Q313
Q315
Q362
Q363
Q364
Q368
Q501
Q502
Q503
Q504
Q508
Q561
Q571
Q572
Q610
Q612
Q619
Q620
D101
D102
D562
RV501
RV502
RV503
RV505
RV561
1-636-556-
11
09

VC-81 BOARD (CONDUCTOR SIDE)


IC141
IC181
IC251
IC301
IC361
IC362
IC363
IC364
IC501
IC502
IC503
IC610
IC612
IC613
IC615
IC616
1-636-556-
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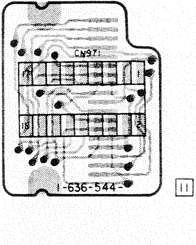
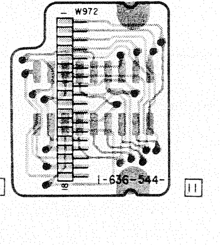
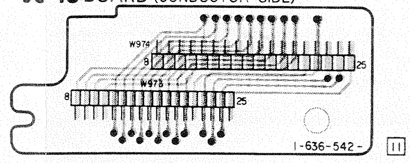
CB-35 BOARD (COMPONENT SIDE)



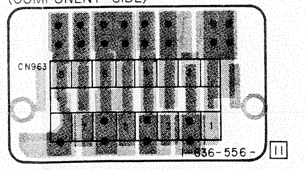
CB-35 BOARD (CONDUCTOR SIDE)


W972
1-636-544-

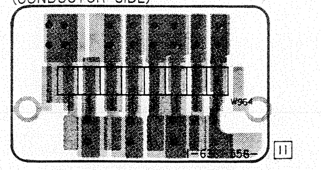
JC-10 BOARD (CONDUCTOR SIDE)


W974
W973
1-636-542-

CB-33 BOARD (COMPONENT SIDE)

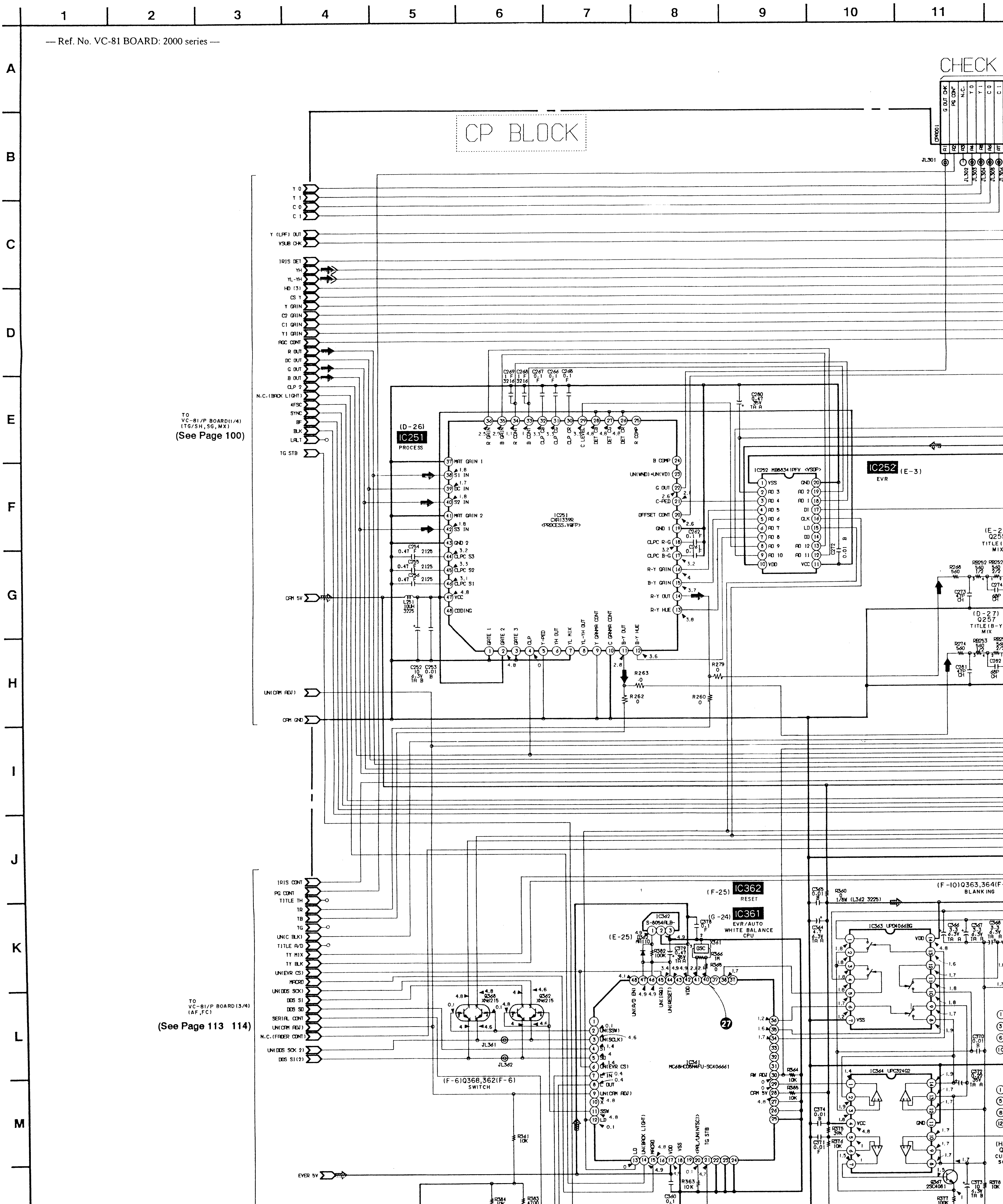

CN963
1-636-556-

CB-33 BOARD (CONDUCTOR SIDE)


W964
1-636-556-

VC-81 (CAMERA) SCHEMATIC DIAGRAM

— Ref. No. VC-81 BOARD: 2000 series —



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A
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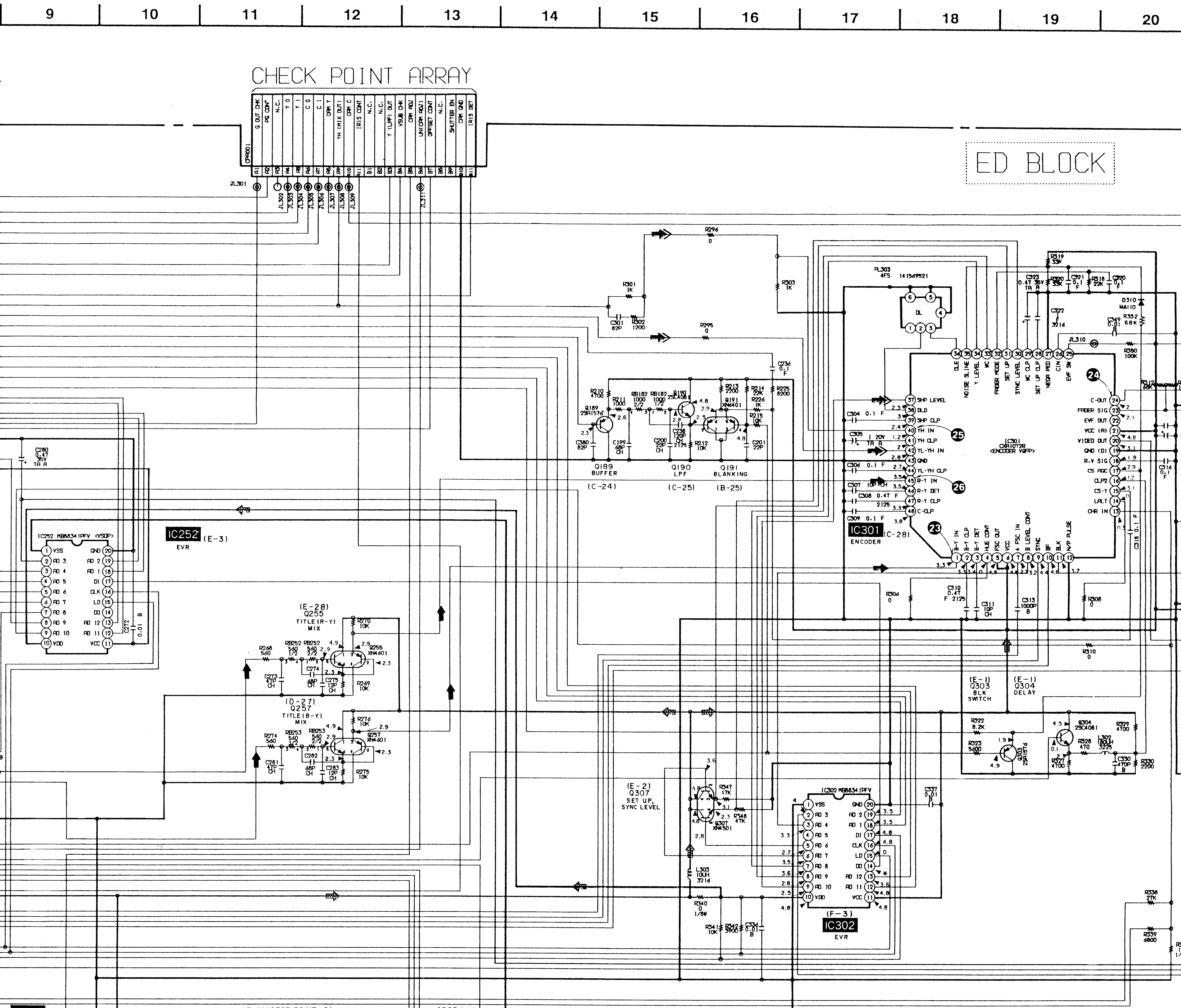
I
J
K
L
M
N
O
CHECK
CP BLOCK
G OUT CHK
PG CONT
N.C.
Y 0
Y 1
C 0
C 1
CP0001
JL301
Y 0
Y 1
C 0
C 1
Y (LPF) OUT
VSUB CHK
IRIS DET
YH
YL-YH
HD (3)
CS Y
Y GAIN
C2 GAIN
C1 GAIN
Y1 GAIN
AGC CONT
R OUT
DC OUT
G OUT
B OUT
CLP 2
N.C.(BACK LIGHT)
4FSC
SYNC
BF
BLK
LALT
TG STB
TO VC-81/P BOARD(1/4) (TG/SH,SG,MX)
(See Page 100)
(D-26)
IC251
PROCESS
IC251 CXA1339R <PROCESS.VQFP>
MAT GAIN 1
S1 IN
DC IN
S2 IN
MAT GAIN 2
S3 IN
GND 2
CLPC S3
CLPC S2
CLPC S1
VCC
CODING
B COMP
G OUT
C-PED
OFFSET CONT
GND 1
CLPC R-G
CLPC B-G
R-Y GAIN
B-Y GAIN
R-Y OUT
R-Y HUE
GATE 1
GATE 2
GATE 3
CLP
Y-PED
YH OUT
YL MIX
YL-YH OUT
Y GAMMA CONT
C GAMMA CONT
B-Y OUT
B-Y HUE
C LEVEL
R COMP
CAM 5V
UN(CAM ADJ)
CAM GND
R263 0
R262 0
R279 0
R260 0
C280 0.47 35V TA A
C252 10 6.3V TA B
C253 0.01 B
L251 10UH 3225
IC252
(E-3)
EVR
IC252 MB88341PFV <VSOP>
VSS
AO 3
AO 4
AO 5
AO 6
AO 7
AO 8
AO 9
AO 10
VDD
GND
AO 2
AO 1
DI
CLK
LD
DO
AO 12
AO 11
VCC
Q255
TITLE
MIX
(D-27)
Q257
TITLE(B-Y)
MIX
IRIS CONT
PG CONT
TITLE TH
TR
TB
TG
UN(C BLK)
TITLE A/D
TY MIX
TY BLK
UN(EVR CS)
MACRO
UN(DDS SCK)
DDS SI
DDS SO
SERIAL CONT
UN(CAM ADJ)
N.C.(FADER CONT)
UN(DDS SCK 2)
DDS SI(2)
TO VC-81/P BOARD(3/4) (AF,FC)
(See Page 113 114)
(F-25)
IC362
RESET
(G-24)
IC361
EVR/AUTO WHITE BALANCE CPU
IC362 S-8054ALB
IC361 MC68HC05N4FU-SC406661
27
X361
OSC
(E-25)
D362
Q368 XN6215
Q362 XN6215
JL361
JL362
(F-6)Q368,362(F-6)
SWITCH
R361 10K
EVER 5V
R364 10K
R383 4700
(E-5)
D361 MA141WA
(E-5)
Q361
INVERTER
Q361 XN1213
L361 10UH 3225
SS 5V
SS GND
C362 0.01 B
C343 4.7 6.3V TA A
UN(SSW)
UN(SCLK)
SO
SI
UN(EVR CS)
IN
OUT
UN(CAM ADJ)
SSW
AW ADJ
CAM 5V
LD
UN(BACK LIGHT)
MACRO
VDD
VSS
<PAL/UN(NTSC)>
TG STB
UN(A/D EN)
UN(TAB)
UN(RESET)
VDD
R360 0 1/8W (L362 3225)
(F-10)Q363,364(F
BLANKING
IC363 UPD4066BG
IC364 UPC324G2
VSS
VCC
GND
Q367 2SC4081
09


9
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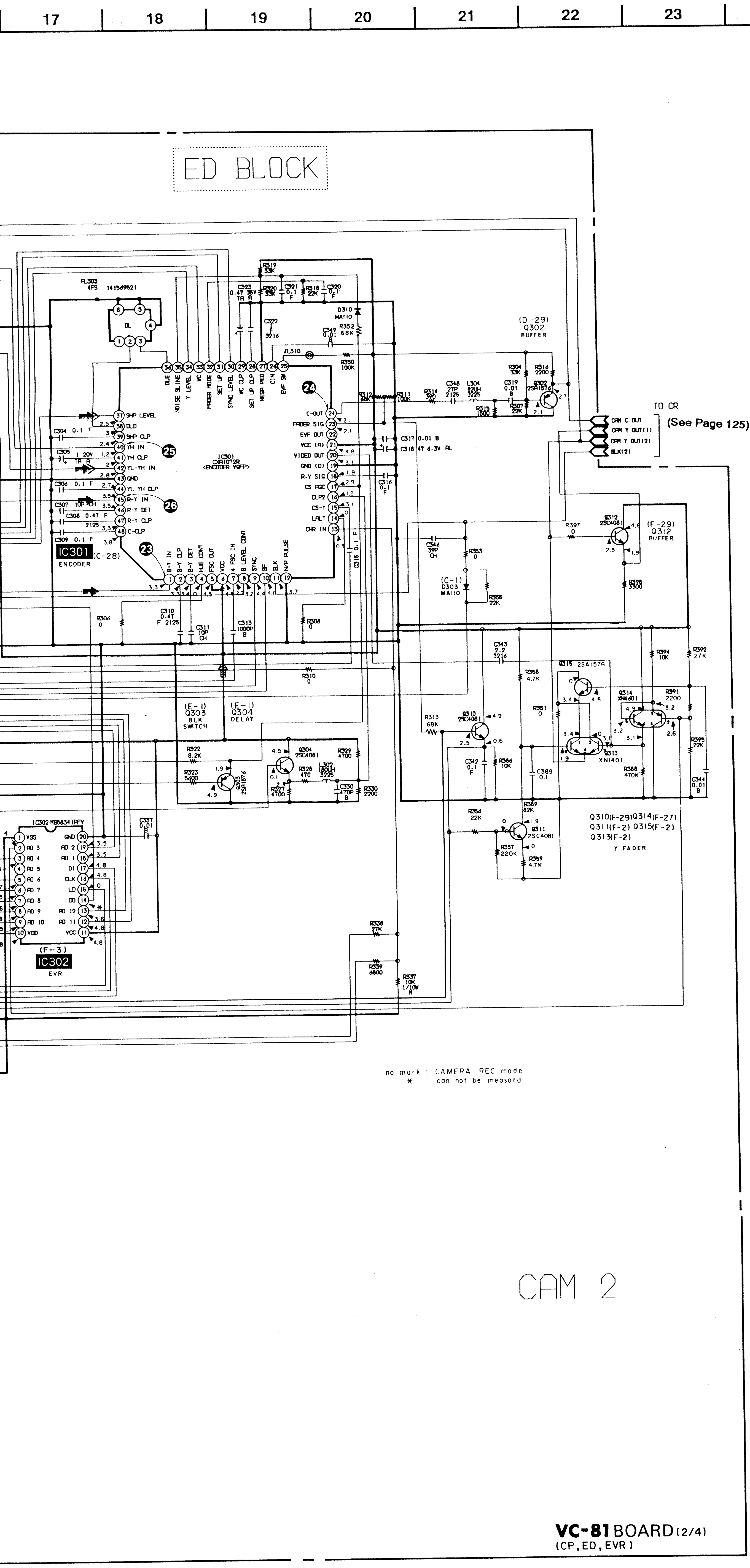
CHECK POINT ARRAY
CPA001
G OUT CHK
PG CON
N.C.
Y 0
Y 1
C 0
C 1
CAM Y
YH (MIX OUT)
CAM C
IRIS CONT
N.C.
N.C.
Y (LPF) OUT
VSUB CHK
CAM ADJ
UNI(CAM ADJ)
OFFSET CONT
N.C.
SHUTTER EN
CAM GND
IRIS DET
ED BLOCK
EVR BLOCK
IC252 MB88341PFV <VSOP>
IC252 (E-3)
EVR
IC301 CXA1072R <ENCODER VQFP>
IC301 (C-28)
ENCODER
IC302 MB88341PFV
IC302 (F-3)
EVR
Q189 BUFFER (C-24)
Q190 LPF (C-25)
Q191 BLANKING (B-25)
(E-28) Q255 TITLE (R-Y) MIX
(D-27) Q257 TITLE (B-Y) MIX
(E-2) Q307 SET UP, SYNC LEVEL
(E-1) Q303 BLK SWITCH
(E-1) Q304 DELAY
IC362 RESET
IC361 EVR/AUTO WHITE BALANCE CPU
(F-10)Q363,364(F-9) BLANKING
Q365(G-20) BLANKING PULSE SEP
IC363 UPD4066BG
IC363 (F-22)
① ② ⑬ SWITCH
③ ④ ⑤ SWITCH
⑥ ⑧ ⑨ DIS CHARG
⑩ ⑪ ⑫ SWITCH
IC364 UPC324G2
IC364 (H-22)
① ② ③ AW COMPALATOR
⑤ ⑥ ⑦ CURRENT SORCE
⑧ ⑨ ⑩ DC OUT BUFFER
⑫ ⑬ ⑭ TRIANGLE WAVEFORMER
(H-21) Q367 CURRENT SORCE
SHP LEVEL
DLD
SHP CLP
YH IN
YH CLP
YL-YH IN
GND
YL-YH CLP
R-Y IN
R-Y DET
R-Y CLP
C-CLP
C-OUT
FADER SIG
EVF OUT
VCC (A)
VIDEO OUT
GND (D)
R-Y SIG
CS AGC
CLP2
CS-Y
LALT
CHR IN
DLE
NOISE SLINE
Y LEVEL
WC
FADER MODE
SET UP
SYNC LEVEL
WC CLP
SET UP CLP
NEGA PED
CIN
EVF SW
B-Y IN
B-Y CLP
B-Y DET
HUE CONT
VCC
4 FSC IN
FSC OUT
SYNC
B LEVEL CONT
BF
BLK
N/P PULSE
VSS
GND
AD 2
AD 3
AD 1
AD 4
AD 5
DI
AD 6
CLK
AD 7
LD
AD 8
DO
AD 9
AD 12
AD 10
AD 11
VDD
VCC
AW ADJ
CAM 5V
DL
DL303 4FS 1415d9521
Q189 2SA1576
Q190 2SC4081
Q191 XN4601
Q255 XN4601
Q257 XN4601
Q307 XN4501
Q303 2SA1576
Q304 2SC4081
Q363 2SC4081
Q364 XN4215
Q365 XN4601
Q367 2SC4081
D310 MA110
L303 10UH 3216
L302 100UH 3225
JL301
JL302
JL303
JL304
JL305
JL306
JL307
JL308
JL309
JL311
JL310
JL364
R296 0
R295 0
R301 1K
R302 1200
R303 1K
C301 82P
C236 0.1 F
R210 4700
R211 1000
RB182 1000 2/2
RB182 1000 1/2
R213 2700
R214 22K
R225 8200
R226 1K
R215 10K
R212 10K
C380 82P
C199 68P CH
C200 22P CH
C238 120P CH
C201 22P
C280 0.47 35V TA A
R270 10K
R268 560
RB252 560 1/2
RB252 560 2/2
C273 47P CH
C274 68P CH
C275 12P CH
R269 10K
R276 10K
R274 560
RB253 560 1/2
RB253 560 2/2
C281 47P CH
C282 68P CH
C283 12P CH
R275 10K
C272 0.01 B
R347 47K
R348 47K
R340 0 1/8W
R341 10K
R342 3900
C336 0.01 B
C337 0.01 B
R319 33K
C323 0.47 35V TA A
R320 33K
C321 0.1 F
R318 22K
C320 0.1 F
C322 3216
C349 0.01
R352 68K
R380 100K
C304 0.1 F
C305 1 20V TA A
C306 0.1 F
C307 10P CH
C308 0.47 F 2125
C309 0.1 F
R306 0
C310 0.47 F 2125
C311 10P CH
C313 1000P B
R308 0
R310 0
C315 0.1 F
C316
R322 8.2K
R323 5600
R328 470
R327 4700
R329 4700
C330 470P B
R330 2200
R338 27K
R339 6800
C365 0.01 B
R360 0 1/8W (L362 3225)
C364 4.7 6.3V TA A
C366 3.3 6.3V TA A
C367 3.3 6.3V TA A
C368 3.3 6.3V TA A
R367 100K
RB362 100K
RB363 10K
R369 10K
R370 22K
R372 2200
R373 1500
R374 100K
R368 100K
R371 1.8
C369 0.01
C370 0.01 B
C372 0.47 35V TA A
C374 0.01 B
C371 0.01 F
R375 39K
R376 10K
R364 10K
R365 10K
C373 10 6.3V TA B
R378 10K
R377 100K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27
ED BLOCK
IC301 CXA1072R ENCODER VQFP
IC301 (C-28) ENCODER
IC302 (F-3) EVR
IC302 MB88341PFV
FL303 4FS
DL
Q302 (D-29) BUFFER 2SA1576
Q312 (F-29) BUFFER 2SC4081
D303 (C-1) MA110
D310 MA110
Q303 (E-1) BLK SWITCH
Q304 (E-1) DELAY
Q315 2SA1576
Q314 XN4601
Q313 XN1401
Q310 2SC4081
Q311 2SC4081
Q310(F-29) Q314(F-27) Q311(F-2) Q315(F-2) Q313(F-2) Y FADER
TO CR (See Page 125)
CAM C OUT
CAM Y OUT(1)
CAM Y OUT(2)
BLK(2)
CAM 2

no mark : CAMERA REC mode
* : can not be measord

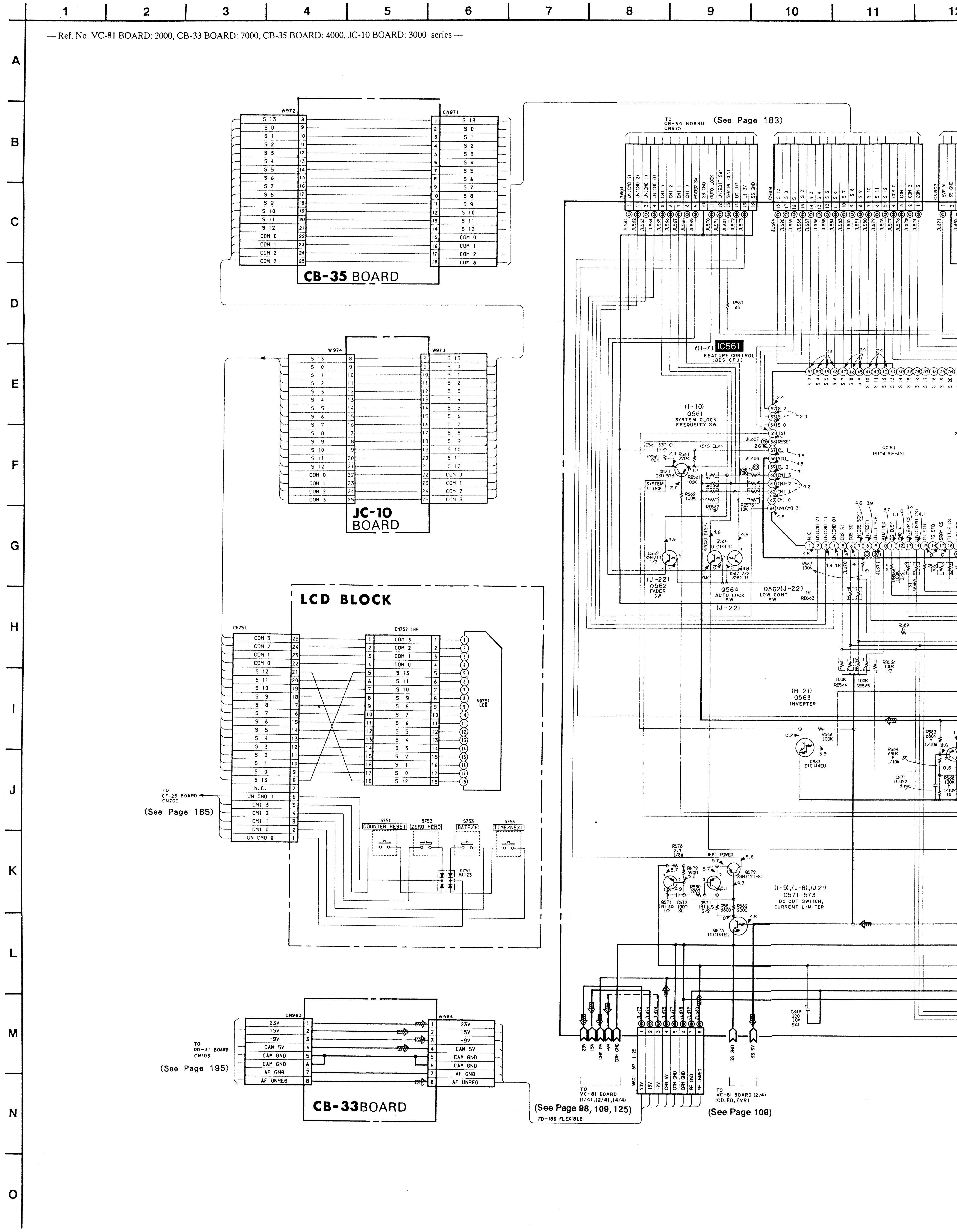
VC-81 BOARD (2/4)
(CP, ED, EVR)

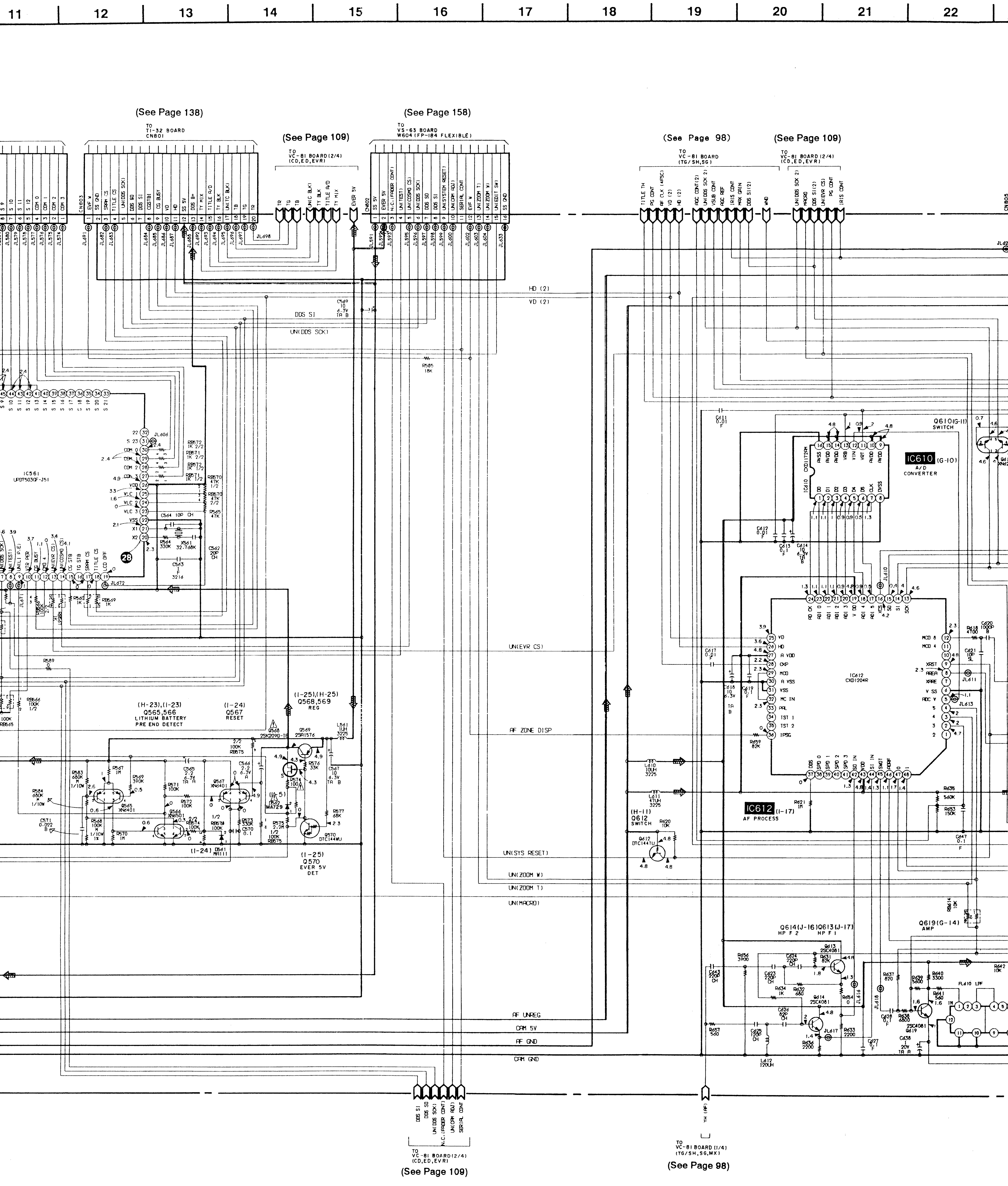
- SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC	➡	⇛		
PB				

VC-81 (CAMERA), CB-33 (RELAY), CB-35 (RELAY), JC-10 (RELAY) SCHEMATIC DIAGRAMS

— Ref. No. VC-81 BOARD: 2000, CB-33 BOARD: 7000, CB-35 BOARD: 4000, JC-10 BOARD: 3000 series —


CB-35 BOARD
W972
CN971
JC-10 BOARD
W974
W973
LCD BLOCK
CN751
CN752 18P
ND751 LCD
S751 COUNTER RESET
S752 ZERO MEMO
S753 DATE/+
S754 TIME/NEXT
D751 MA123
TO CF-25 BOARD CN769
(See Page 185)
CB-33BOARD
CN963
W964
TO DD-31 BOARD CN103
(See Page 195)
23V
15V
-9V
CAM 5V
CAM GND
AF GND
AF UNREG
TO CB-34 BOARD CN975
(See Page 183)
CN804
CN806
CN803
(H-7) IC561
FEATURE CONTROL (DDS CPU)
IC561 UPD7503GF-J51
(I-10) Q561 SYSTEM CLOCK FREQUEUCY SW
SYSTEM CLOCK
(J-22) Q562 FADER SW
Q564 AUTO LOCK SW (J-22)
Q562(J-22) LOW CONT SW
(H-21) Q563 INVERTER
Q563 DTC144EU
(I-9),(J-8),(J-21) Q571-573 DC OUT SWITCH, CURRENT LIMITER
SEMI POWER
Q572 2SB1121-S1
Q573 DTC144EU
TO VC-81 BOARD (1/4),(2/4),(4/4)
(See Page 98, 109, 125)
FD-186 FLEXIBLE
TO VC-81 BOARD (2/4) (CD,ED,EVR)
(See Page 109)
SS GND
SS 5V
W801 8P 1.25
C448 220 10V SXJ
1 2 3 4 5 6 7 8 9 10 11 12
A B C D E F G H I J K L M N O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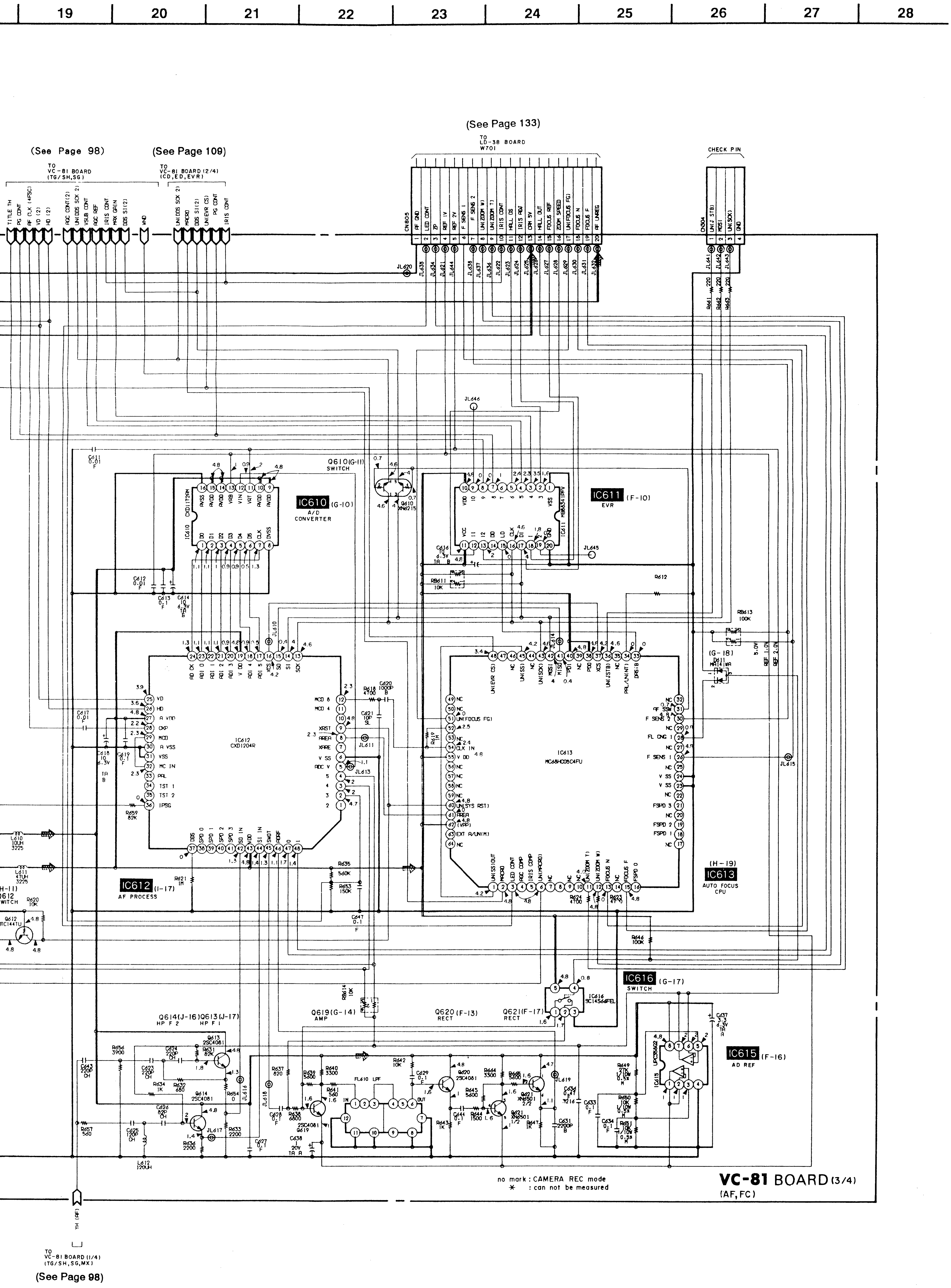
22
(See Page 138)
TO TI-32 BOARD CN801
(See Page 109)
TO VC-81 BOARD (2/4) (CD,ED,EVR)
(See Page 158)
TO VS-63 BOARD W604 (FP-184 FLEXIBLE)
(See Page 98)
TO VC-81 BOARD (TG/SH,SG)
(See Page 109)
TO VC-81 BOARD (2/4) (CD,ED,EVR)
CN803
CN802
IC561 UPD7503GF-J51
HD (2)
VD (2)
DDS S1
UN(DDS SCK)
UN(EVR CS)
AF ZONE DISP
UN(SYS RESET)
UN(ZOOM W)
UN(ZOOM T)
UN(MACRO)
AF UNREG
CAM 5V
AF GND
CAM GND
(H-23),(I-23) Q565,566 LITHIUM BATTERY PRE END DETECT
(I-24) Q567 RESET
(I-25),(H-25) Q568,569 REG
(I-25) Q570 EVER 5V DET
(I-24) D561 MA111
(H-11) Q612 SWITCH
Q610(G-11) SWITCH
IC610 (G-10) A/D CONVERTER
IC612 (I-17) AF PROCESS
IC612 CXD1204R
Q614(J-16) HP F 2
Q613(J-17) HP F 1
Q619(G-14) AMP
FL610 LPF
TO VC-81 BOARD (2/4) (CD,ED,EVR)
(See Page 109)
TO VC-81 BOARD (1/4) (TG/SH,SG,MX)
(See Page 98)


19
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28
(See Page 98)
TO VC-81 BOARD (TG/SH,SG)
(See Page 109)
TO VC-81 BOARD (2/4) (CD,ED,EVR)
(See Page 133)
TO LD-38 BOARD W701
CN805
CHECK PIN
CN304
IC610 (G-10) A/D CONVERTER
CXD1172AM
Q610 (G-11) SWITCH
IC611 (F-10) EVR
MB88341PF
IC612 (I-17) AF PROCESS
CXD1204R
IC613 (H-19) AUTO FOCUS CPU
MC68HC05C4FU
IC616 (G-17) SWITCH
SC14S66FEL
IC615 (F-16) AD REF
UPC358G2
Q614 (J-16) HP F 2
Q613 (J-17) HP F 1
Q619 (G-14) AMP
Q620 (F-13) RECT
Q621 (F-17) RECT
FL610 LPF
TH (RF)
TO VC-81 BOARD (1/4) (TG/SH,SG,MX)
(See Page 98)

no mark : CAMERA REC mode
＊ : can not be measured

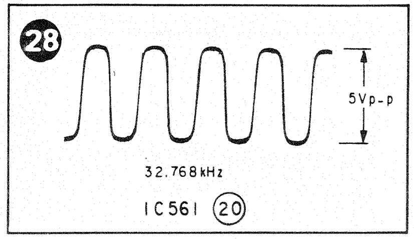
VC-81 BOARD (3/4)
(AF,FC)

VC-81 (CAMERA), CB-33 (RELAY), CB-35 (RELAY), JC-10 (RELAY) PRINTED WIRING BOARDS

— Ref. No. VC-81 BOARD: 2000, CB-33 BOARD: 7000, CB-35 BOARD: 4000, JC-10 BOARD: 3000 series —

- **For printed wiring boards.**
- VC-81, CB-33 boards are the printed wiring board which has four layers structure but inner two layers' patterns are omitted.

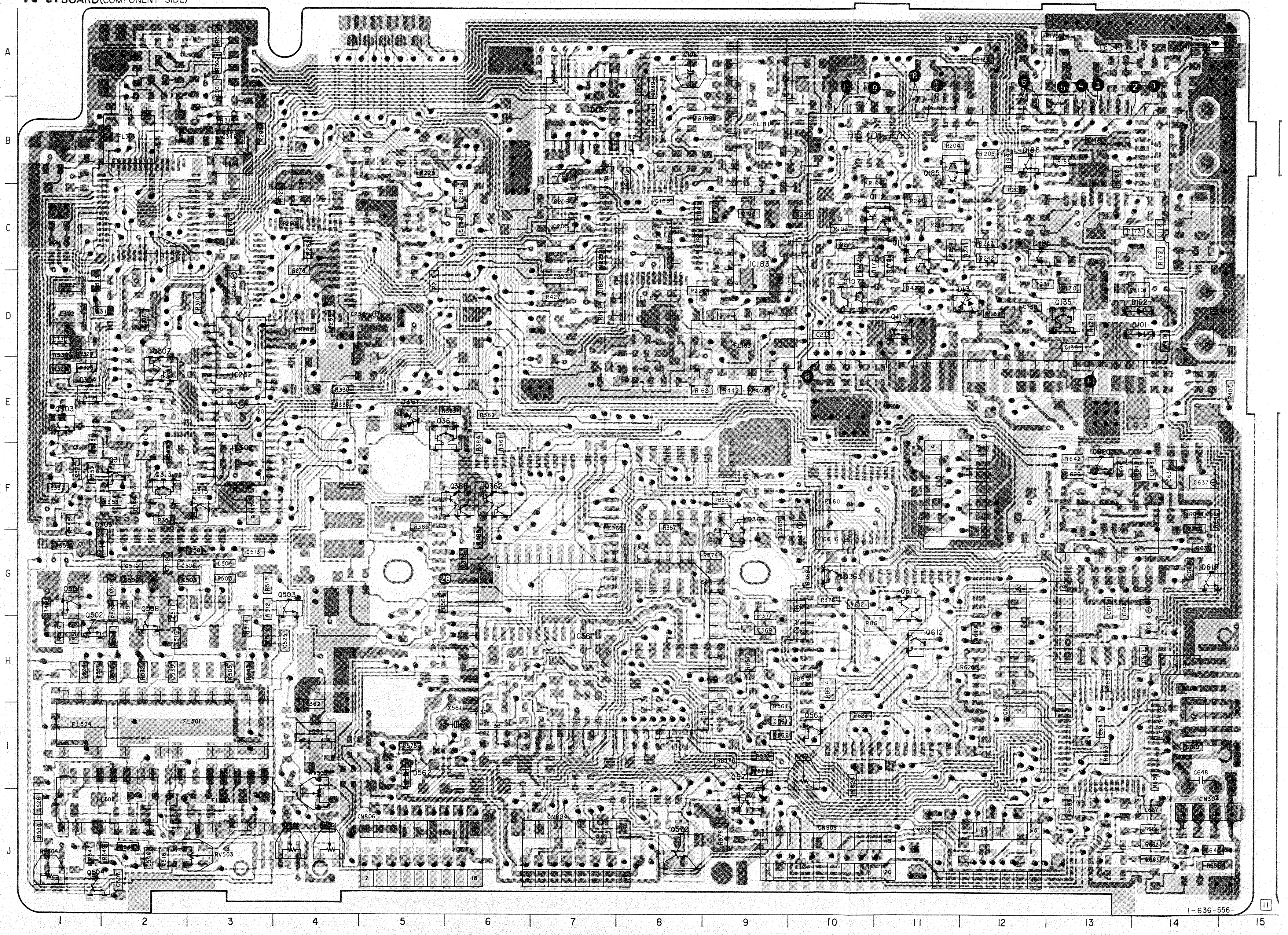
VC-81 BOARD (3/4)



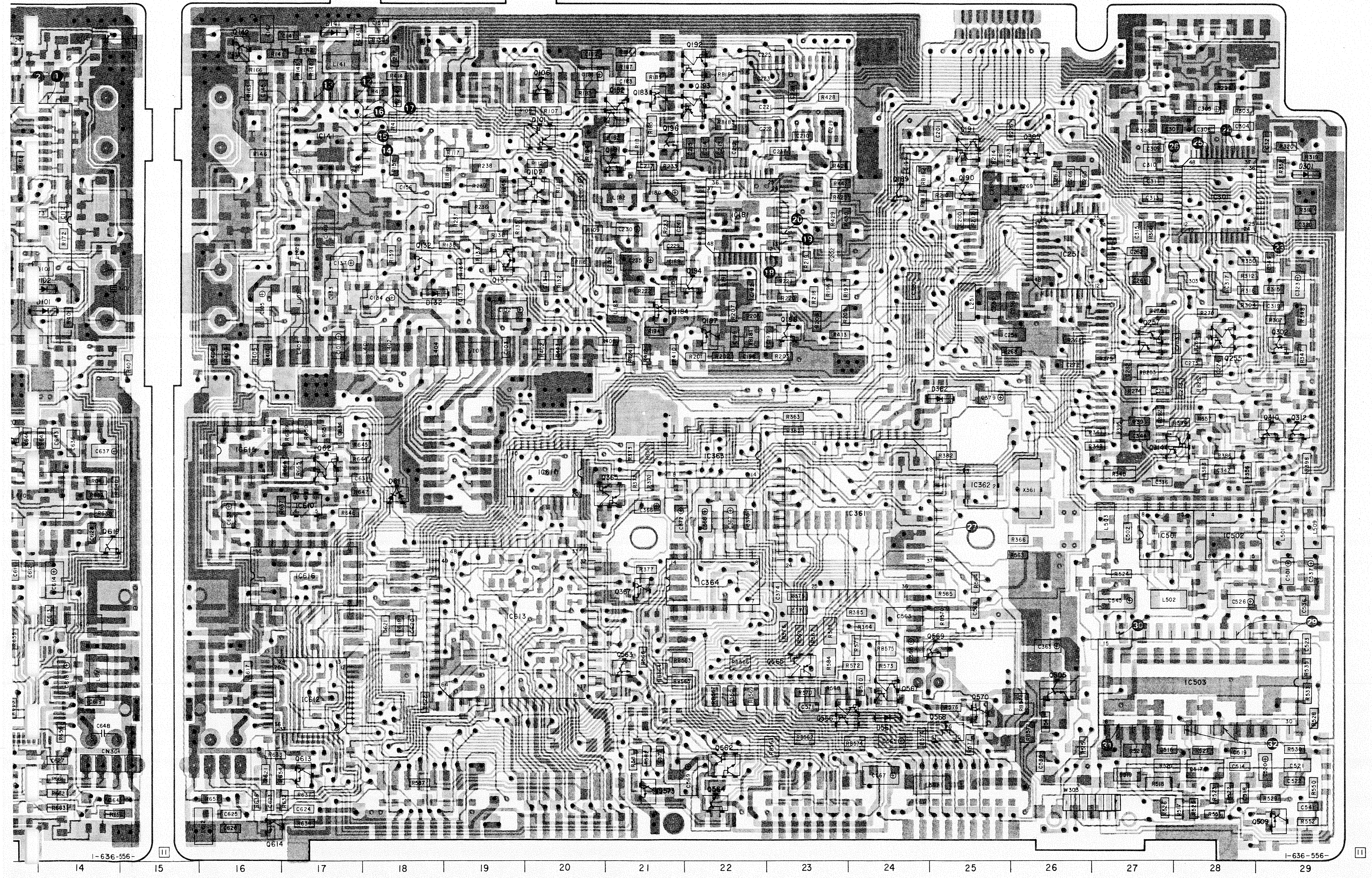
VC-81 BOARD

D101	D-14
D102	D-14
D131	D-11
D132	D-18
D141	A-17
D301	B-29
D303	G-1
D361	E-5
D362	E-25
D561	I-24
D562	I-5
D611	G-13
IC141	B-17
IC181	C-22
IC182	B-7
IC183	C-9
IC251	D-26
IC252	E-3
IC301	C-28
IC302	F-3
IC361	G-24
IC362	F-25
IC363	F-22
IC364	H-22
IC501	G-27
IC502	G-28
IC503	I-28
IC561	H-7
IC610	G-10
IC611	F-20
IC612	I-17
IC613	H-19
IC615	F-16
IC616	G-17
Q101	B-20
Q102	C-20
Q106	A-20
Q107	D-10
Q111	C-11
Q112	C-10
Q113	D-11
Q131	D-19
Q132	D-18
Q135	D-13
Q142	A-16
Q181	B-20
Q182	B-20
Q183	B-20
Q184	D-21
Q185	B-11
Q186	B-12
Q187	E-22
Q188	E-23
Q189	C-24
Q190	C-25
Q191	B-25
Q192	A-22
Q193	B-22
Q194	D-22
Q195	C-12
Q196	B-21
Q255	E-28
Q257	D-27
Q302	D-29
Q303	E-1
Q304	E-1
Q307	E-2
Q310	F-29
Q311	F-2
Q312	F-29
Q313	F-2
Q314	F-27
Q315	F-2
Q361	E-5
Q362	F-6
Q363	G-10
Q364	F-9
Q365	G-20
Q367	H-21
Q368	F-6
Q501	G-1
Q502	H-1
Q503	G-4
Q504	J-1
Q505	I-26
Q508	H-2
Q509	J-29
Q561	I-10
Q562	J-22
Q563	H-21
Q564	J-22
Q565	H-23
Q566	I-23
Q567	I-24
Q568	I-25
Q569	H-25
Q570	I-25
Q571	I-9
Q572	J-8
Q573	J-21
Q610	G-11
Q612	H-11
Q613	J-17
Q614	J-16
Q619	G-14
Q620	F-13
Q621	F-17

VC-81 BOARD (COMPONENT SIDE)



VC-81 BOARD(CONDUCTOR SIDE)


1-636-556-
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28
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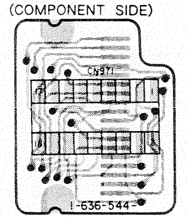
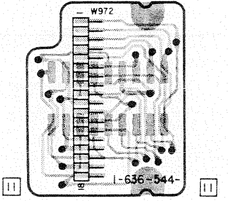
IC361
IC362
IC364
IC365
IC501
IC502
IC503
IC510
IC512
IC513
IC515
IC516
IC517
IC141
IC251
IC301
X361
L502
CN301
W305

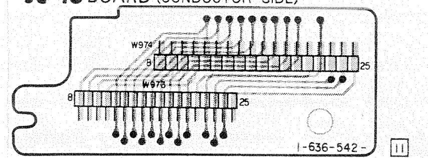
CB-35 BOARD
(COMPONENT SIDE)


CN971
1-636-544-

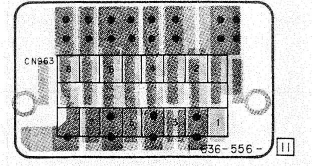
CB-35 BOARD
(CONDUCTOR SIDE)


W972
1-636-544-

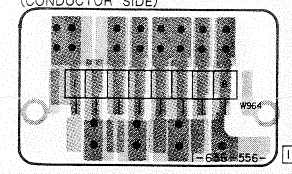
JC-10 BOARD (CONDUCTOR SIDE)


W974
W973
1-636-542-

CB-33 BOARD
(COMPONENT SIDE)


CN963
1-636-556-

CB-33 BOARD
(CONDUCTOR SIDE)

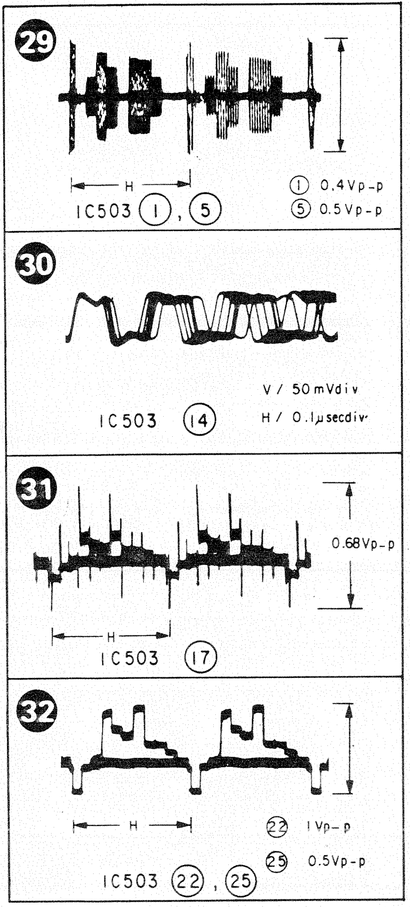

W964
1-636-556-

VC-81 (CAMERA), CB-33 (RELAY), CB-35 (RELAY), JC-10 (RELAY) PRINTED WIRING BOARDS

— Ref. No. VC-81 BOARD: 2000, CB-33 BOARD: 7000, CB-35 BOARD: 4000, JC-10 BOARD: 3000 series —

- **For printed wiring boards.**
- VC-81, CB-33 boards are the printed wiring board which has four layers structure but inner two layers' patterns are omitted.

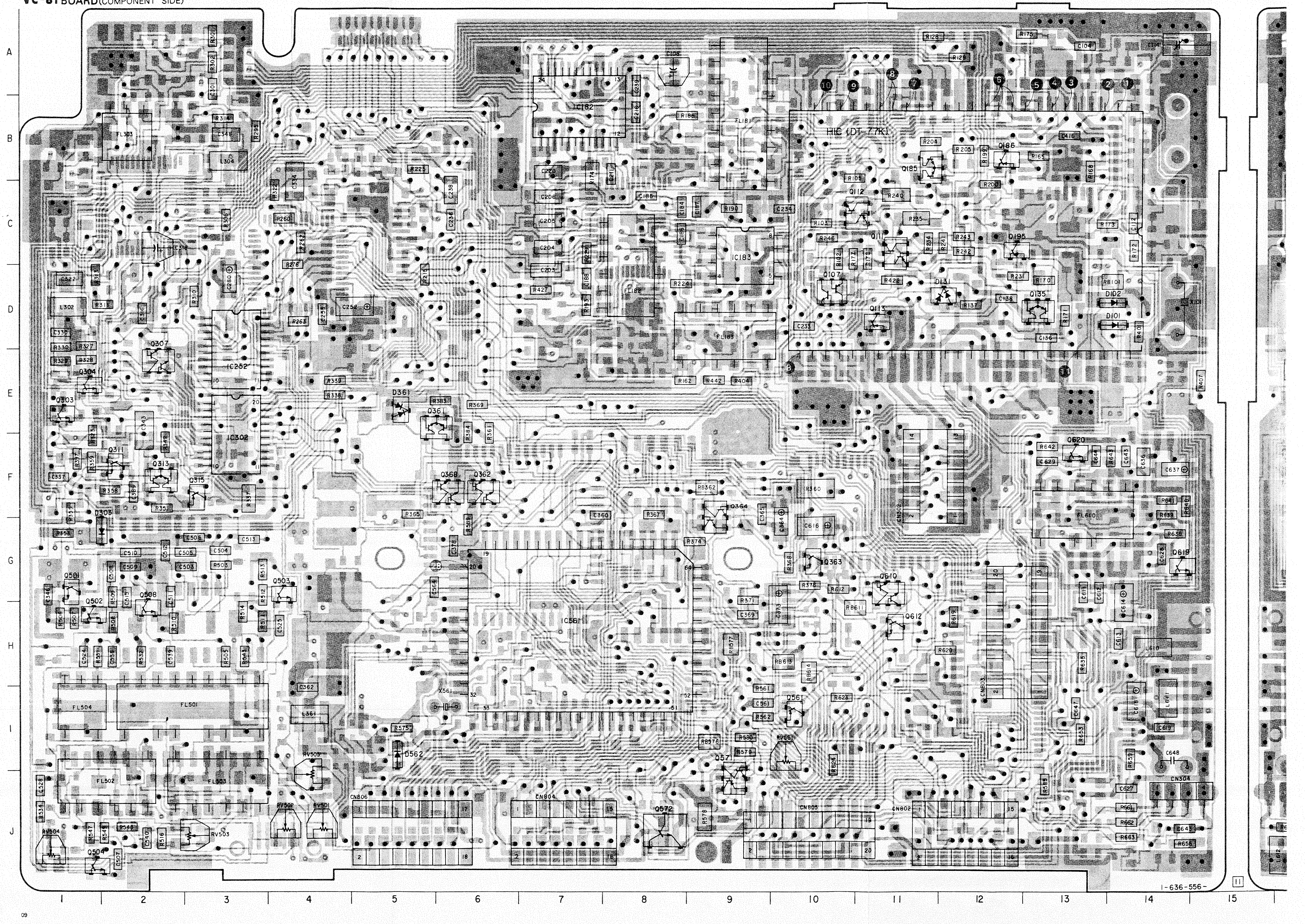
VC-81 BOARD (4/4)



VC-81 BOARD

D101	D-14
D102	D-14
D131	D-11
D132	D-18
D141	A-17
D301	B-29
D303	G-1
D361	E-5
D362	E-25
D561	I-24
D562	I-5
D611	G-18
IC141	B-17
IC181	C-22
IC182	B-7
IC183	C-9
IC251	D-26
IC252	E-3
IC301	C-28
IC302	F-3
IC361	G-24
IC362	F-25
IC363	F-22
IC364	H-22
IC501	G-27
IC502	G-28
IC503	I-28
IC561	H-7
IC610	G-10
IC611	F-20
IC612	I-17
IC613	H-19
IC615	F-16
IC616	G-17
Q101	B-20
Q102	C-20
Q106	A-20
Q107	D-10
Q111	C-11
Q112	C-10
Q113	D-11
Q131	D-19
Q132	D-18
Q135	D-13
Q142	A-16
Q181	B-20
Q182	B-20
Q183	B-20
Q184	D-21
Q185	B-11
Q186	B-12
Q187	E-22
Q188	E-23
Q189	C-24
Q190	C-25
Q191	B-25
Q192	A-22
Q193	B-22
Q194	D-22
Q195	C-12
Q196	B-21
Q255	E-28
Q257	D-27
Q302	D-29
Q303	E-1
Q304	E-1
Q307	E-2
Q310	F-29
Q311	F-2
Q312	F-29
Q313	F-2
Q314	F-27
Q315	F-2
Q361	E-5
Q362	F-6
Q363	G-10
Q364	F-9
Q365	G-20
Q367	H-21
Q368	F-6
Q501	G-1
Q502	H-1
Q503	G-4
Q504	J-1
Q505	I-26
Q508	H-2
Q509	J-29
Q561	I-10
Q562	J-22
Q563	H-21
Q564	J-22
Q565	H-23
Q566	I-23
Q567	I-24
Q568	I-25
Q569	H-25
Q570	I-25
Q571	I-9
Q572	J-8
Q573	J-21
Q610	G-11
Q612	H-11
Q613	J-17
Q614	J-16
Q619	G-14
Q620	F-13
Q621	F-17

VC-81 BOARD(COMPONENT SIDE)



A
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J
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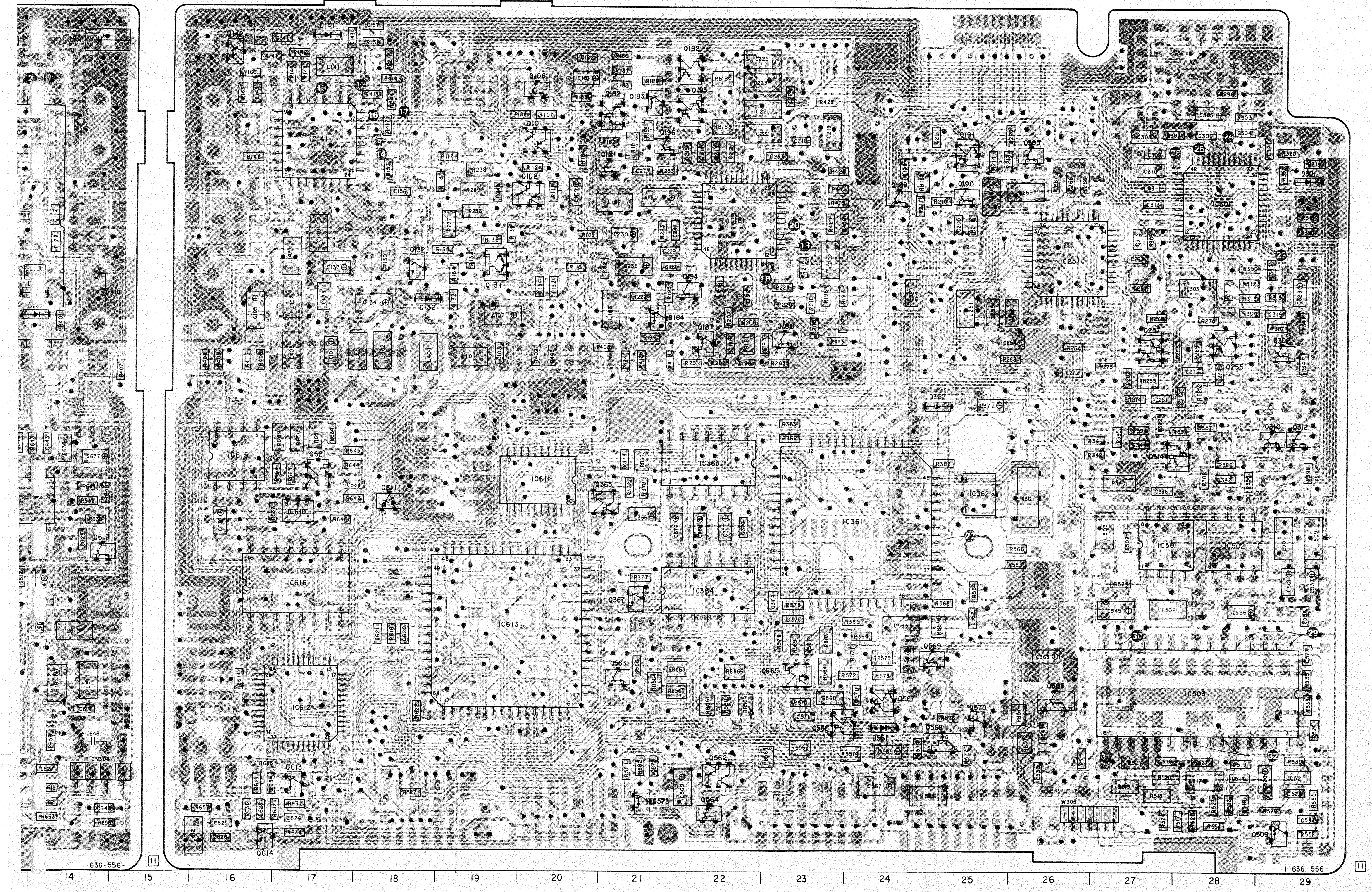
HIC (DT-77K)
IC182
IC183
IC252
IC302
IC561
FL181
FL183
FL303
FL501
FL502
FL503
FL504
CN802
CN803
CN804
CN805
CN806
CN304
X561
D361
D562
D101
D102
Q307
Q361
Q362
Q363
Q364
Q368
Q501
Q502
Q503
Q504
Q508
Q561
Q571
Q572
Q610
Q612
Q619
Q620
RV502
RV503
RV504
RV505
RV509
1-636-556-
11
09

VC-81 BOARD (CONDUCTOR SIDE)


1-636-556-
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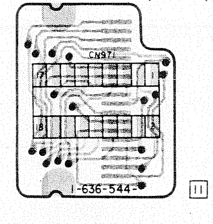
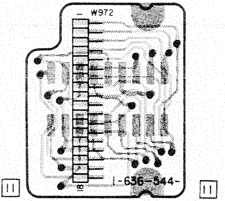
IC141
IC181
IC251
IC501
IC502
IC503
IC361
IC362
IC363
IC364
IC610
IC611
IC612
IC613
IC615
IC616
X361
CN304
W303

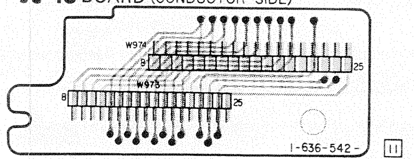
CB-35 BOARD (COMPONENT SIDE)


CN971
1-636-544-
11

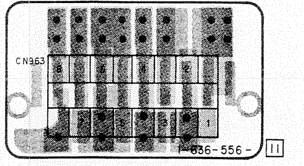
CB-35 BOARD (CONDUCTOR SIDE)


W972
1-636-544-
11

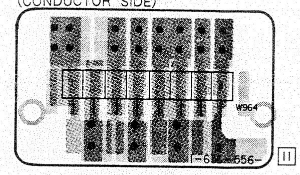
JC-10 BOARD (CONDUCTOR SIDE)


W974
W975
25
8
1-636-542-
11

CB-33 BOARD (COMPONENT SIDE)

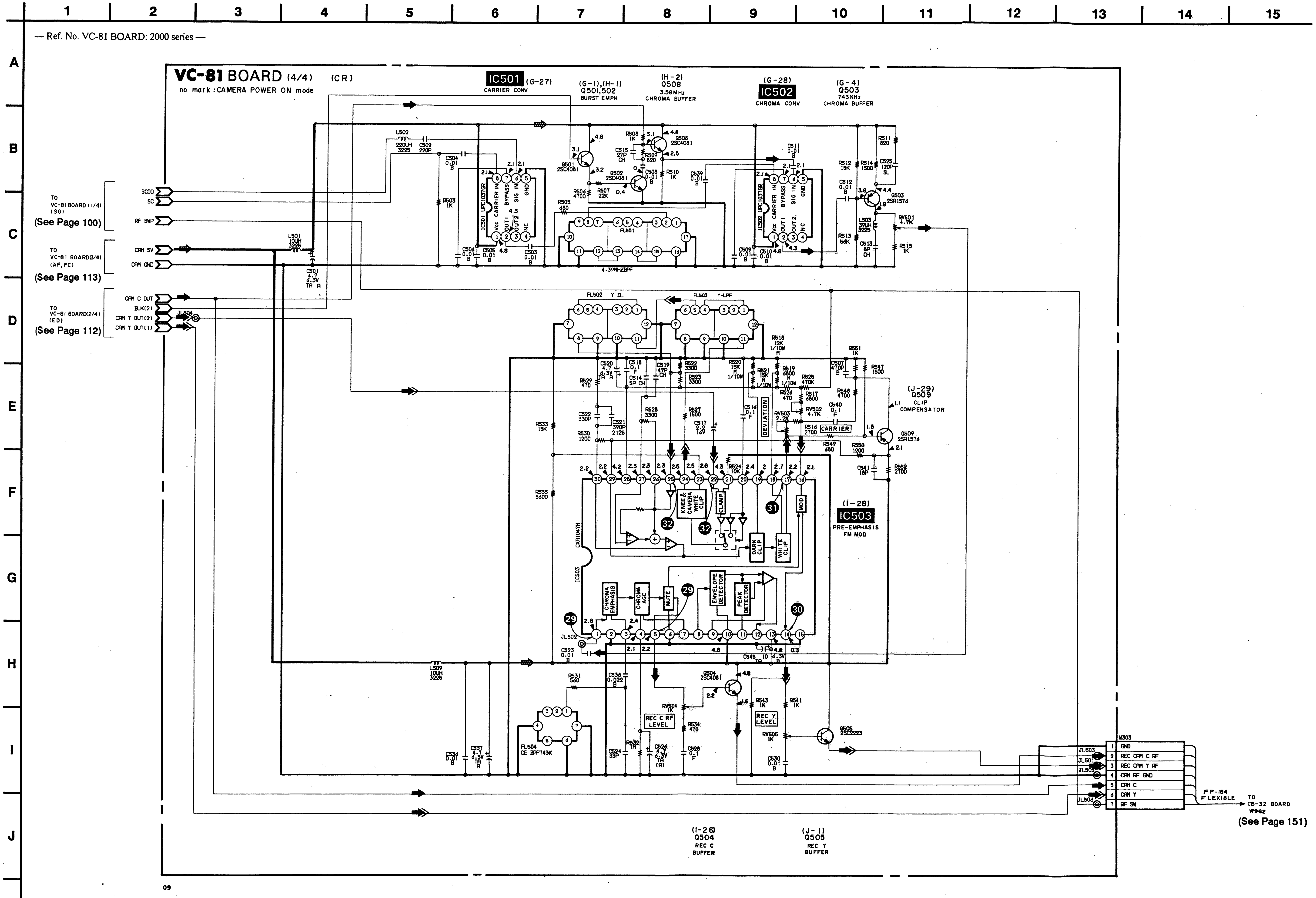

CN363
1-636-556-
11

CB-33 BOARD (CONDUCTOR SIDE)


W964
1-636-556-
11

VC-81 (CAMERA) SCHEMATIC DIAGRAM

— Ref. No. VC-81 BOARD: 2000 series —



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12
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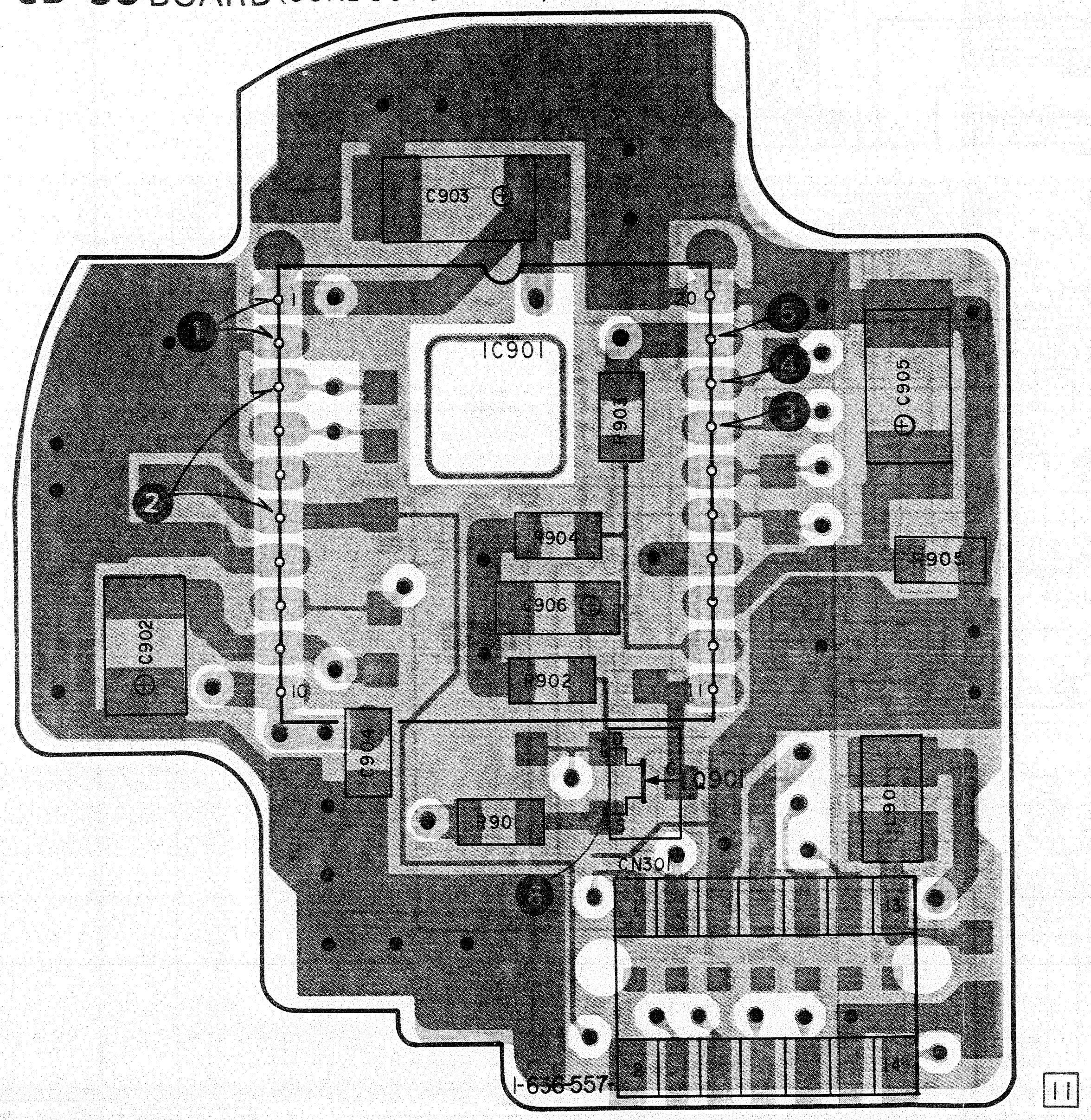
14
15
A
B
C
D
E
F
G
H
I
J
VC-81 BOARD (4/4) (CR)
no mark : CAMERA POWER ON mode
IC501 (G-27)
CARRIER CONV
(G-1),(H-1)
Q501,502
BURST EMPH
(H-2)
Q508
3.58MHz
CHROMA BUFFER
(G-28)
IC502
CHROMA CONV
(G-4)
Q503
743KHz
CHROMA BUFFER
TO
VC-81 BOARD (1/4)
(SG)
(See Page 100)
SCDO
SC
RF SWP
TO
VC-81 BOARD(3/4)
(AF, FC)
(See Page 113)
CAM 5V
CAM GND
TO
VC-81 BOARD(2/4)
(ED)
(See Page 112)
CAM C OUT
BLK(2)
CAM Y OUT(2)
CAM Y OUT(1)
JL504
L501 10UH 3226
C501 4.7 6.3V TA A
L502 220UH 3225
C502 220P
C504 0.01 B
R503 1K
IC501 UPC1037GR
CARRIER IN
BYPASS
SIG IN
GND
Vcc
OUT1
OUT2
NC
C506 0.01 B
C505 0.01 B
C503 0.01 B
Q501 2SC4081
Q502 2SC4081
Q508 2SC4081
R504 4700
R507 22K
R505 680
R508 1K
C515 27P CH
R509 820
C508 0.01 B
R510 1K
C539 0.01 B
FL501
4.3MHZBPF
IC502 UPC1037GR
C511 0.01 B
R511 820
R512 15K
R514 1500
C525 120P SL
C512 0.01 B
Q503 2SA1576
L503 39UH 3225
R513 56K
C513 8P CH
RV501 4.7K
R515 1K
C509 0.01 B
C510 0.01 B
FL502 Y DL
FL503 Y-LPF
R518 12K 1/10W M
R551 1K
C507 470P B
R547 1500
C520 4.7 6.3V TA A
C518 0.1 F
C519 47P CH
C514 5P CH
R522 3300
R523 3300
R520 15K M 1/10W
R521 15K M 1/10W
R519 6800 M 1/10W
R525 470K
R526 470
R517 6800
R548 4700
R529 470
C522 330P
C521 390P 2125
R528 3300
R527 1500
C516 0.1 F
C517 2.2 16V
RV503 2.2K
RV502 4.7K
C540 0.1 F
R533 15K
R530 1200
DEVIATION
R516 2700
CARRIER
R549 680
R550 1200
C541 18P
R552 2700
(J-29)
Q509
CLIP COMPENSATOR
Q509 2SA1576
R524 10K
R535 5600
KNEE & CAMERA WHITE CLIP
CLAMP
MOD
DARK CLIP
WHITE CLIP
(I-28)
IC503
PRE-EMPHASIS FM MOD
CXA1047M
IC503
CHROMA EMPHASIS
CHROMA AGC
MUTE
ENVELOPE DETECTOR
PEAK DETECTOR
29
30
31
32
JL502
C523 0.01 B
C545 10 6.3V TA B
L509 10UH 3226
R531 560
C536 0.022 B
Q504 2SC4081
RV504 1K
REC C RF LEVEL
R534 470
R543 1K
R541 1K
REC Y LEVEL
RV505 1K
Q505 2SC2223
FL504 CE BPF743K
C534 0.01 B
C537 4.7 6.3V TA A
C524 33P
R532 1K
C526 4.7 6.3V TA (A)
C528 0.1 F
C530 0.01 B
W303
JL503
JL501
JL505
JL506
1 GND
2 REC CAM C RF
3 REC CAM Y RF
4 CAM RF GND
5 CAM C
6 CAM Y
7 RF SW
FP-184 FLEXIBLE
TO CB-32 BOARD W962
(See Page 151)
(I-26)
Q504
REC C BUFFER
(J-1)
Q505
REC Y BUFFER
09

CD-50 (CCD IMAGER) PRINTED WIRING BOARD

— Ref. No. CD-50 BOARD: 1000 series —

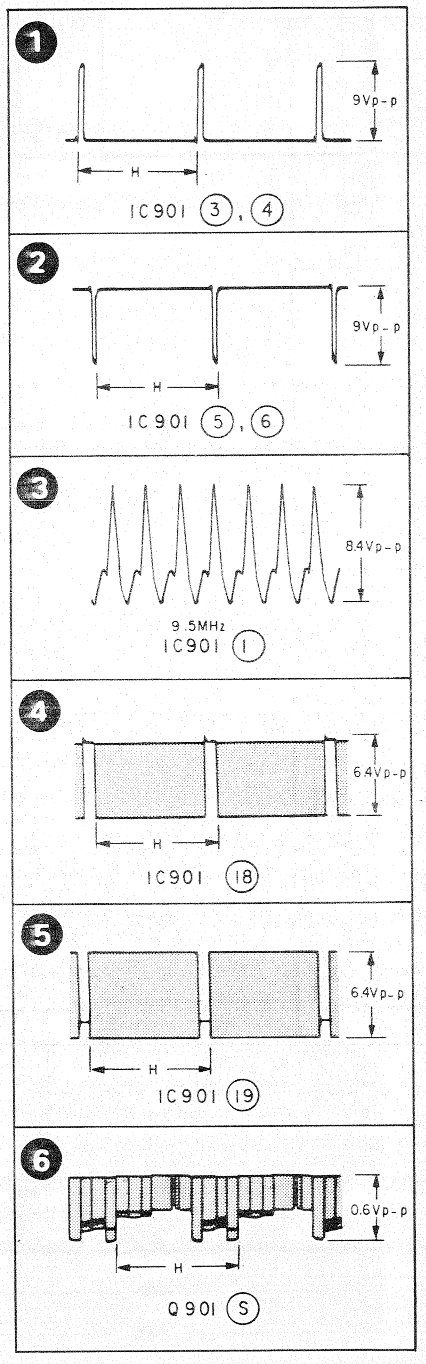
- **For printed wiring boards.**
- CD-50 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.

CD-50 BOARD (CONDUCTOR SIDE)


C903
IC901
R903
C905
R904
R905
C906
C902
R902
C904
Q901
D
G
S
R901
C901
CN301
1
10
11
20
13
2
14
1-636-557-
11
①
②
③
④
⑤
⑥

09

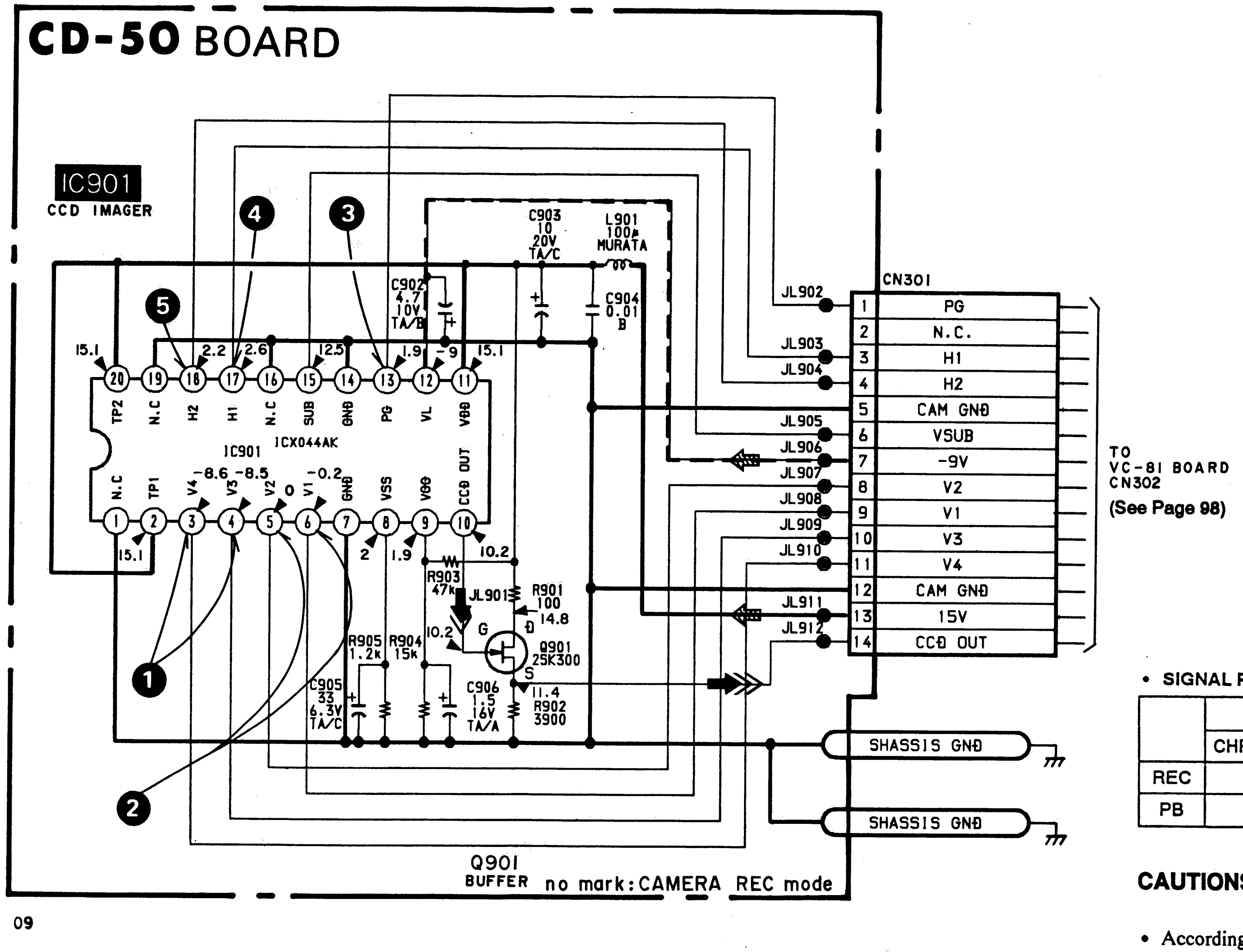
CD-50 BOARD



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

— Ref. No. CD-50 BOARD: 1000 series —

A
B
C
D
E
F
G
H
I
J


CD-50 BOARD
IC901
CCD IMAGER
IC901 ICX044AK
TP2
N.C
H2
H1
N.C
SUB
GND
PG
VL
VDD
N.C
TP1
V4
V3
V2
V1
GND
VSS
VGG
CCD OUT
15.1
2.2
2.6
12.5
1.9
-9
15.1
-8.6
-8.5
0
-0.2
2
1.9
10.2
C903 10 20V TA/C
L901 100μ MURATA
C902 4.7 10V TA/B
C904 0.01 B
R903 47k
JL901
R901 100
14.8
10.2
G
D
S
Q901 2SK300
11.4
R905 1.2k
R904 15k
C905 33 6.3V TA/C
C906 1.5 16V TA/A
R902 3900
JL902
JL903
JL904
JL905
JL906
JL907
JL908
JL909
JL910
JL911
JL912
CN301
1 PG
2 N.C.
3 H1
4 H2
5 CAM GND
6 VSUB
7 -9V
8 V2
9 V1
10 V3
11 V4
12 CAM GND
13 15V
14 CCD OUT
TO VC-81 BOARD CN302
(See Page 98)
SHASSIS GND
SHASSIS GND
Q901 BUFFER
no mark: CAMERA REC mode
①
②
③
④
⑤
09

- SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC			➡≫	
PB				

CAUTIONS FOR REPLACING THE CCD IMAGER

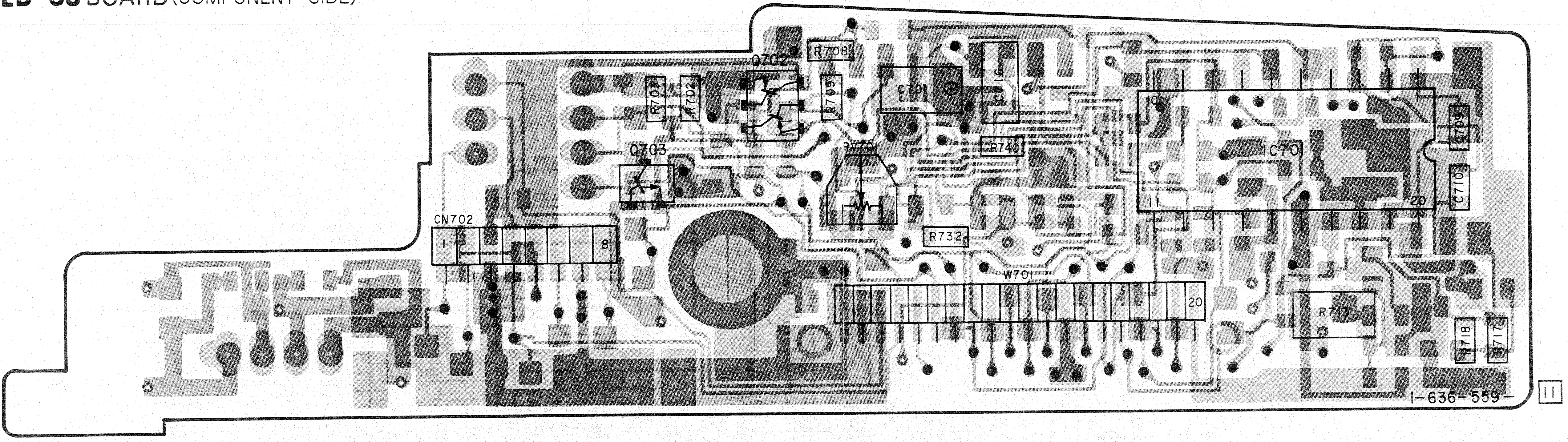
- According to type of CCD imager (IC901 on the CD-50 board), it is necessary to require the compensating ROM (IC001 on the DT-77K board).
  The repairing CCD imager does not require the compensating ROM.
  So when replacing the CCD imager on which the compensating ROM is installed, remove the compensating ROM before replacement.
- Since the mounted CD-50 and DT-77K boards ehich are supplied asa repair parts are not installed IC901 and IC001 respectively, replace the respective ICs from the previous board to the new when replacing each board.
- When you replaced the CCD imager, perform the overall camera head adjustment.
- CCD imager has such a structure that it may be spoiled by static electricityy, so handle it with a care similar for MOS IC. Further, be sure that the light receiving part has no stick of dust and no entry of bright light.

LD-38 (IRIS/FOCUS/ZOOM MOTOR DRIVE) PRINTED WIRING BOARD

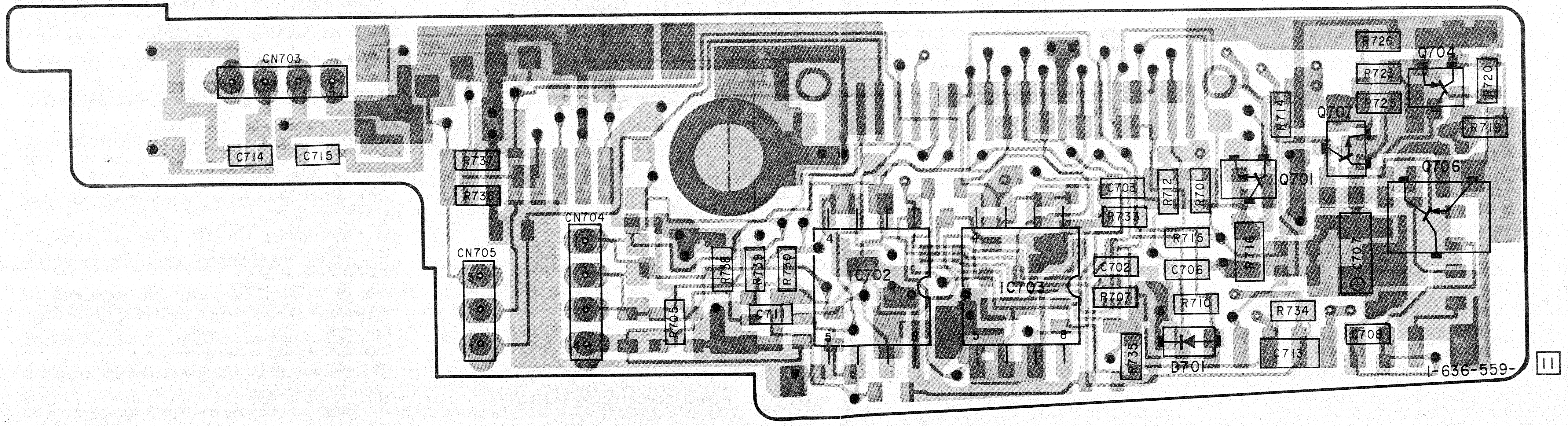
— Ref. No. LD-38 BOARD: 3000 series —

- **For printed wiring boards.**
- LD-38 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.

LD-38 BOARD (COMPONENT SIDE)

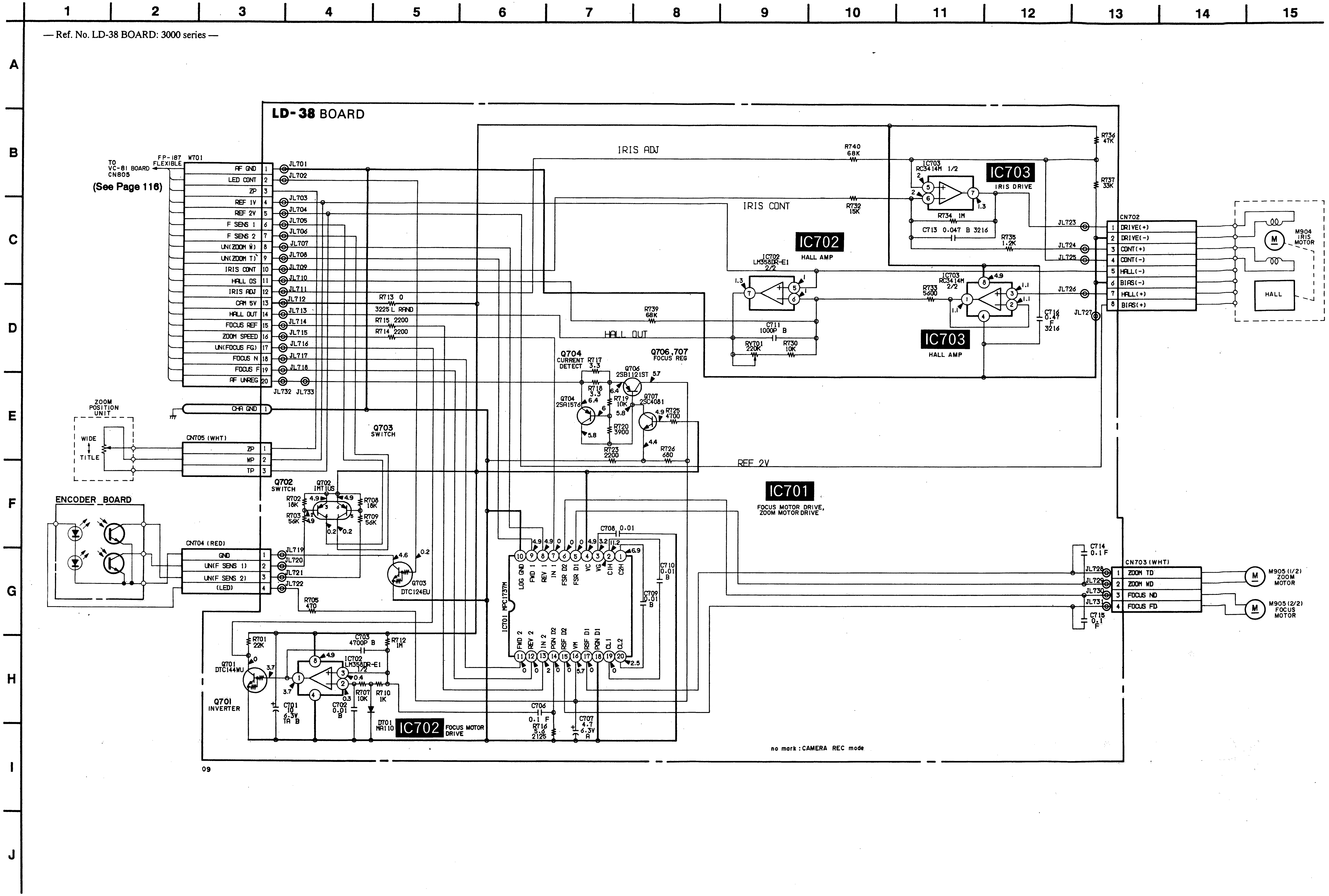

Q702
R708
R703
R702
R709
C701
C716
10
IC701
11
20
C709
C710
Q703
RV701
R740
R732
CN702
1
8
W701
20
R713
R718
R717
1-636-559-
11

LD-38 BOARD (CONDUCTOR SIDE)


CN703
4
C714
C715
R737
R736
CN704
CN705
3
1
1
4
R738
R739
R730
R705
C711
IC702
4
5
IC703
4
5
8
C703
R733
C702
R707
R712
R701
R715
C706
R710
D701
R735
R716
C707
R734
C713
C708
Q701
Q707
Q706
Q704
R726
R723
R725
R714
R720
R719
1-636-559-
11

LD-38 (IRIS/FOCUS/ZOOM MOTOR DRIVE) SCHEMATIC DIAGRAM

— Ref. No. LD-38 BOARD: 3000 series —


1
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7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
LD-38 BOARD
TO VC-81 BOARD CN805
(See Page 116)
FP-187 FLEXIBLE
W701
AF GND
LED CONT
ZP
REF 1V
REF 2V
F SENS 1
F SENS 2
UN(ZOOM W)
UN(ZOOM T)
IRIS CONT
HALL OS
IRIS ADJ
CAM 5V
HALL OUT
FOCUS REF
ZOOM SPEED
UN(FOCUS FG)
FOCUS N
FOCUS F
AF UNREG
CHA GND
JL701
JL702
JL703
JL704
JL705
JL706
JL707
JL708
JL709
JL710
JL711
JL712
JL713
JL714
JL715
JL716
JL717
JL718
JL732
JL733
ZOOM POSITION UNIT
WIDE
TITLE
CN705 (WHT)
ZP
WP
TP
ENCODER BOARD
CN704 (RED)
GND
UN(F SENS 1)
UN(F SENS 2)
(LED)
JL719
JL720
JL721
JL722
IRIS ADJ
IRIS CONT
R740 68K
R732 15K
R739 68K
HALL OUT
REF 2V
R713 0
3225 L RAND
R715 2200
R714 2200
IC703 RC3414M 1/2
IC703
IRIS DRIVE
R734 1M
C713 0.047 B 3216
R735 1.2K
R736 47K
R737 33K
IC702
HALL AMP
IC702 LM358DR-E1 2/2
C711 1000P B
RV701 220K
R730 10K
IC703 RC3414M 2/2
R733 5600
IC703
HALL AMP
C716 0.47 F 3216
JL723
JL724
JL725
JL726
JL727
CN702
DRIVE(+)
DRIVE(-)
CONT(+)
CONT(-)
HALL(-)
BIAS(-)
HALL(+)
BIAS(+)
M904 IRIS MOTOR
HALL
Q704 CURRENT DETECT
R717 3.3
Q704 2SA1576
R718 3.3
R719 10K
R720 3900
R723 2200
Q706,707 FOCUS REG
Q706 2SB1121ST
Q707 2SC4081
R725 4700
R726 680
Q703 SWITCH
Q702 SWITCH
Q702 IMT1US
R702 18K
R703 56K
R708 18K
R709 56K
Q703 DTC124EU
R705 470
IC701
FOCUS MOTOR DRIVE, ZOOM MOTOR DRIVE
IC701 MPC1737M
LOG GND
FWD 1
REV 1
IN 1
FSR D2
FSR D1
VC
VG
C1H
C2H
FWD 2
REV 2
IN 2
PGN D2
RSF D2
VM
RSF D1
PGN D1
CL1
CL2
C708 0.01
C710 0.01 B
C709 0.01 B
C706 0.1 F
R716 5.6 2125
C707 4.7 6.3V
C714 0.1 F
C715 0.1 F
CN703 (WHT)
ZOOM TD
ZOOM WD
FOCUS ND
FOCUS FD
JL728
JL729
JL730
JL731
M905 (1/2) ZOOM MOTOR
M905 (2/2) FOCUS MOTOR
R701 22K
Q701 DTC144WU
Q701 INVERTER
C701 10 6.3V TA B
IC702 LM358DR-E1 1/2
C703 4700P B
R712 1M
R707 10K
R710 1K
C702 0.01 B
D701 MA110
IC702
FOCUS MOTOR DRIVE
09

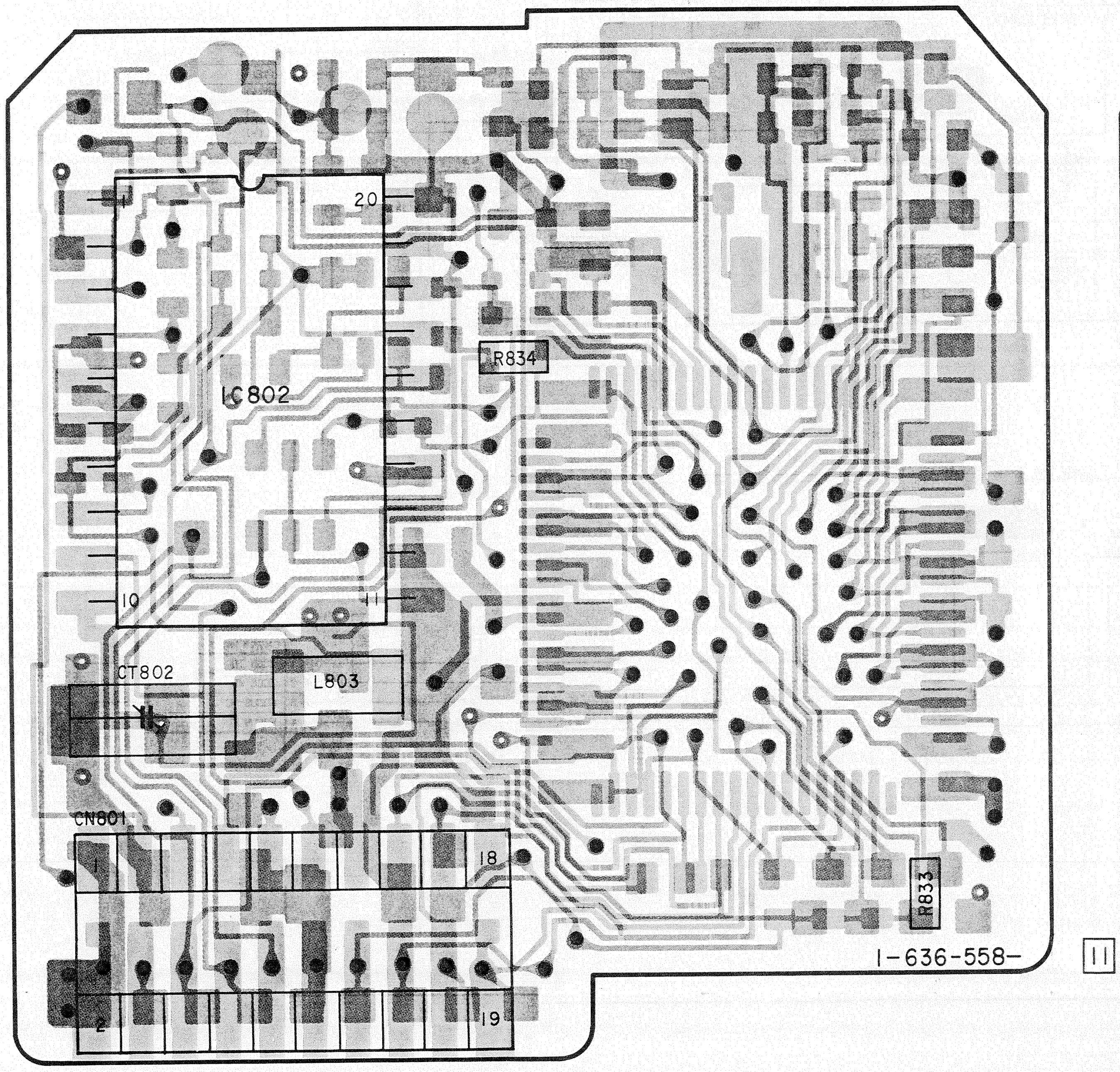
no mark : CAMERA REC mode

TI-32 (DIGITAL TITLER) PRINTED WIRING BOARD

— Ref. No. TI-32 BOARD: 4000 series —

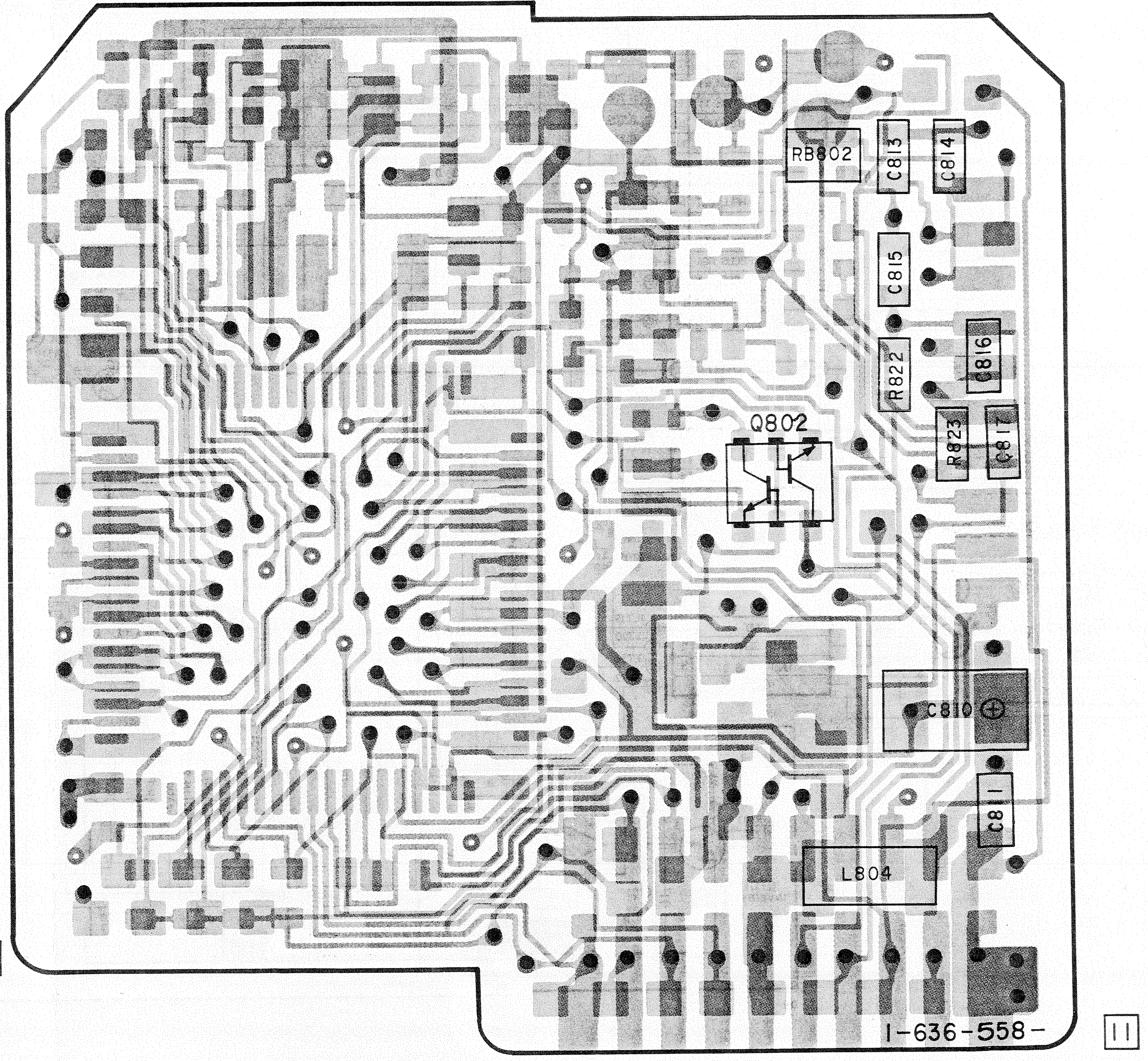
- **For printed wiring boards.**
- TI-32 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.

TI-32 BOARD (COMPONENT SIDE)


20
R834
IC802
10
11
CT802
L803
CN801
18
2
19
R833
1-636-558-
11

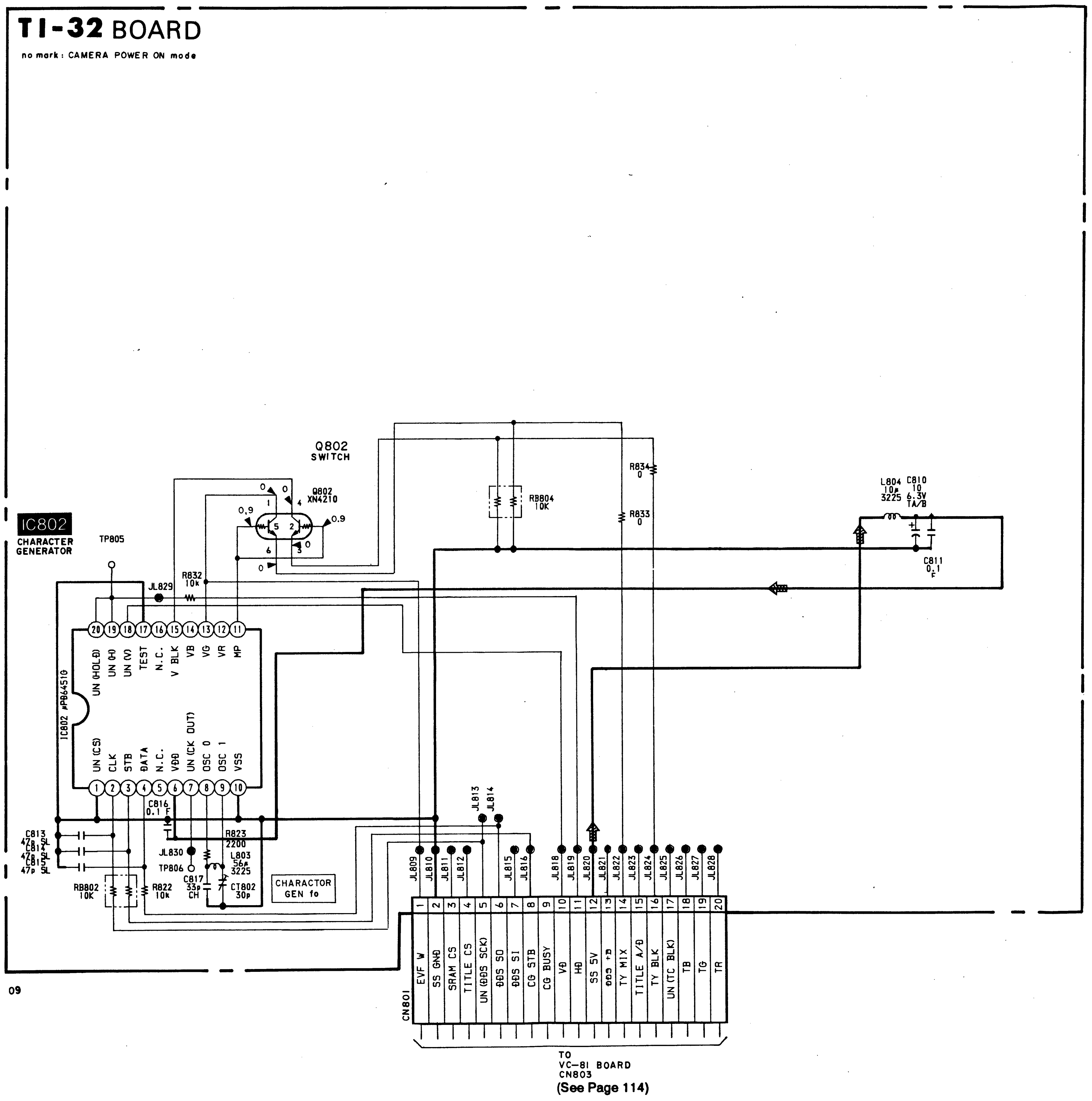
09

TI-32 BOARD (CONDUCTOR SIDE)


RB802
C813
C814
C815
R822
C816
Q802
R823
C817
C810
C811
L804
1-636-558-
11

TI-32 (DIGITAL TITLER) SCHEMATIC DIAGRAM

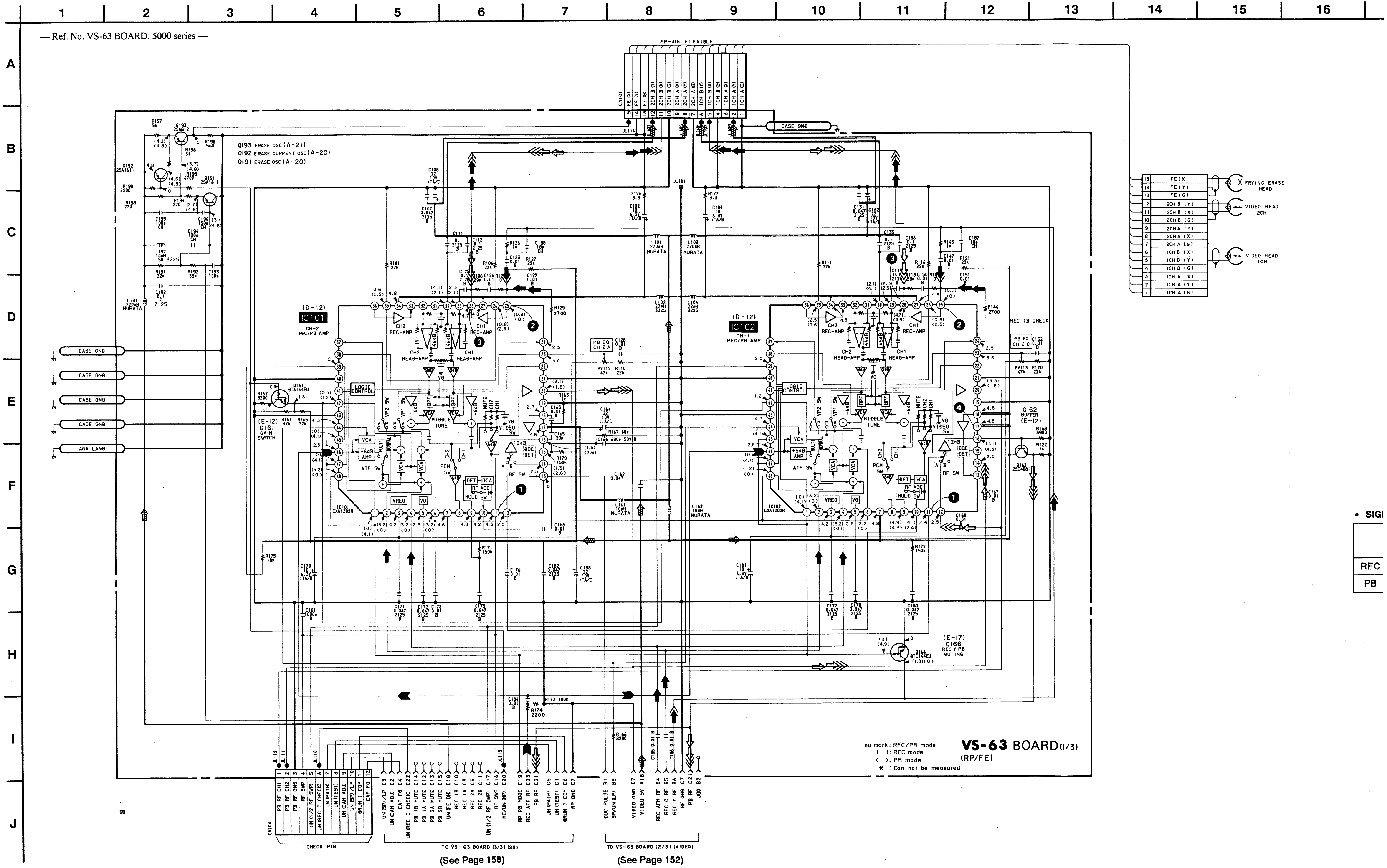
— Ref. No. TI-32 BOARD: 4000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
TI-32 BOARD
no mark: CAMERA POWER ON mode
IC802
CHARACTER GENERATOR
TP805
JL829
R832 10k
Q802 SWITCH
Q802 XN4210
0
0
1
4
0.9
5
2
0.9
6
3
0
0
20 19 18 17 16 15 14 13 12 11
UN (HOLD)
UN (H)
UN (V)
TEST
N.C.
V BLK
VB
VG
VR
MP
IC802 μPB64510
UN (CS)
CLK
STB
DATA
N.C.
VDD
UN (CK OUT)
OSC 0
OSC 1
VSS
1 2 3 4 5 6 7 8 9 10
C816 0.1 F
C813 47p SL
C814 47p SL
C815 47p SL
R823 2200
JL830
TP806
L803 56μ 3225
C817 33p CH
CT802 30p
RB802 10K
R822 10k
CHARACTOR GEN fo
RB804 10K
R834 0
R833 0
L804 10μ 3225
C810 10 6.3V TA/B
C811 0.1 F
JL813
JL814
JL809
JL810
JL811
JL812
JL815
JL816
JL818
JL819
JL820
JL821
JL822
JL823
JL824
JL825
JL826
JL827
JL828
CN801
1 EVF W
2 SS GND
3 SRAM CS
4 TITLE CS
5 UN (DDS SCK)
6 DDS SO
7 DDS SI
8 CG STB
9 CG BUSY
10 VD
11 HD
12 SS 5V
13 DDS +B
14 TY MIX
15 TITLE A/B
16 TY BLK
17 UN (TC BLK)
18 TB
19 TG
20 TR
09

TO
VC-81 BOARD
CN803
(See Page 114)

VS-63 (HEAD AMP) SCHEMATIC DIAGRAM

— Ref. No. VS-63 BOARD: 5000 series —


1
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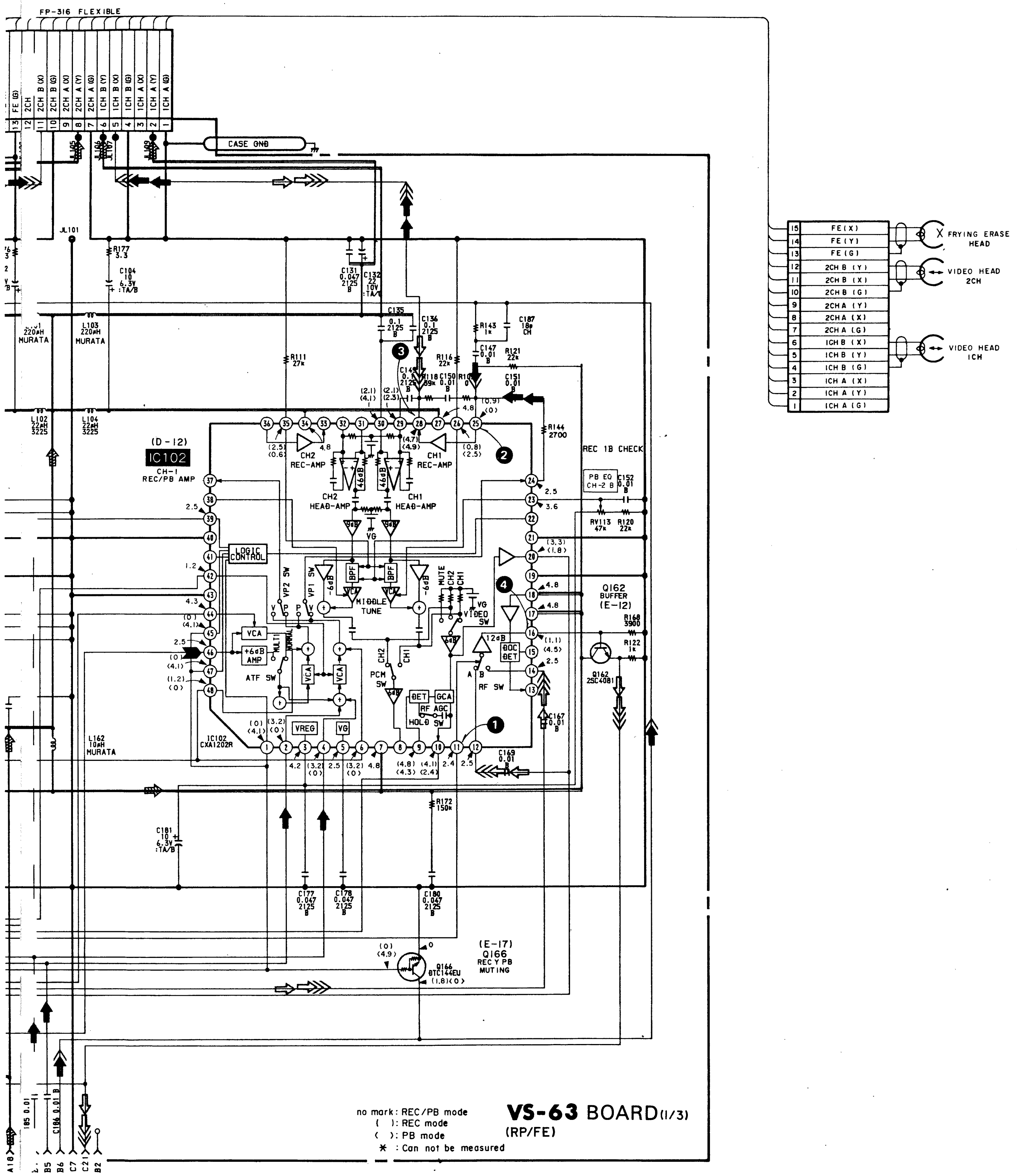
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
FP-316 FLEXIBLE
CN101
15 FE (X)
14 FE (Y)
13 FE (G)
12 2CH B (Y)
11 2CH B (X)
10 2CH B (G)
9 2CH A (X)
8 2CH A (Y)
7 2CH A (G)
6 1CH B (X)
5 1CH B (Y)
4 1CH B (G)
3 1CH A (X)
2 1CH A (Y)
1 1CH A (G)
CASE GND
FRYING ERASE HEAD
VIDEO HEAD 2CH
VIDEO HEAD 1CH
Q193 ERASE OSC (A-21)
Q192 ERASE CURRENT OSC (A-20)
Q191 ERASE OSC (A-20)
Q193 2SA1812
Q192 2SA1611
Q191 2SA1611
L191 220μH MURATA
L192 10μH SK 3225
IC101 CH-2 REC/PB AMP (D-12)
IC102 CH-1 REC/PB AMP (D-12)
CXA1202R
CH2 REC-AMP
CH1 REC-AMP
CH2 HEAD-AMP
CH1 HEAD-AMP
LOGIC CONTROL
VCA
+6dB AMP
ATF SW
MIDDLE TUNE
PCM SW
RF SW
RF AGC
HOLD SW
VREG
VG
DOC DET
BPF
MUTE
VIDEO SW
Q161 DTA144EU
(E-12) Q161 GAIN SWITCH
Q162 BUFFER (E-12)
Q162 2SC4081
(E-17) Q166 REC Y PB MUTING
Q166 DTC144EU
PB EQ CH-2 A
PB EQ CH-2 B
REC 1B CHECK
L101 220μH MURATA
L103 220μH MURATA
L102 22μH 3225
L104 22μH 3225
L161 10μH MURATA
L162 10μH MURATA
JL101
JL114
CASE GND
CASE GND
CASE GND
CASE GND
ANA LAND
CN204
1 PB RF CH1
2 PB RF CH2
3 PB RF GND
4 RF SWP
5 UN (1/2 RF SWP)
6 UN (REC C CHECK)
7 UN (PATH)
8 UN (TEST)
9 UN (CAM ADJ)
10 UN (SP)/LP
11 DRUM 1 COM
12 CAP FG
CHECK PIN
UN (SP)/LP C3
UN (CAM ADJ) C3
CAP FG C4
UN (REC C CHECK) C22
PB 1B MUTE C14
PB 1A MUTE C12
PB 2A MUTE C13
PB 2B MUTE C15
UN (FE ON) C18
REC 1B C10
REC 1A C8
REC 2A C9
REC 2B C11
UN (1/2 RF SWP) C17
RF SWP C16
ME/UN (MP) C20
RP PB MODE C19
REC ATF RF C23
PB RF C21
UN (PATH) C5
UN (TEST) C1
DRUM 1 COM C6
RP GND C7
DOC PULSE B1
SP/UN (LP) B3
VIDEO GND C7
VIDEO 5V A18
REC AFM RF B4
REC C RF B5
REC Y RF B6
RF GND C7
PB RF C23
JOG B2
TO VS-63 BOARD (3/3) (SS)
(See Page 158)
TO VS-63 BOARD (2/3) (VIDEO)
(See Page 152)
no mark: REC/PB mode
( ): REC mode
< >: PB mode
* : Can not be measured
VS-63 BOARD(1/3)
(RP/FE)
09

• SIG

REC
PB

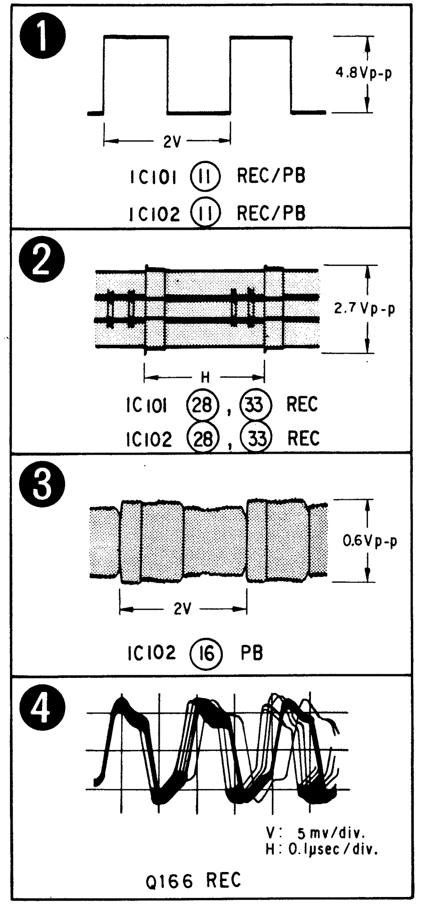

FP-316 FLEXIBLE
CASE GND
JL101
R177 3.3
C104 10 6.3V TA/B
L103 220μH MURATA
L102 22μH
L104 22μH
C131 0.047
C132 22 10V
C135 0.1
C136 0.1
R111 27k
R143 1k
C187 18p CH
C147 0.01
R121 22k
R116 22k
C151 0.01
R144 2700
(D-12)
IC102
CH-1 REC/PB AMP
CH2 REC-AMP
CH1 REC-AMP
CH2 HEAD-AMP
CH1 HEAD-AMP
46dB
LOGIC CONTROL
VCA
+6dB AMP
ATF SW
VP2 SW
VP1 SW
BPF
MIDDLE TUNE
MUTE
VIDEO SW
PCM SW
RF SW
12dB
AGC DET
DET
GCA
RF AGC HOLD SW
VREG
VG
IC102 CXA1202R
REC 1B CHECK
PB EQ CH-2 B
C152 0.01
RV113 47k
R120 22k
Q162 BUFFER (E-12)
R168 3900
R122 1k
Q162 2SC4081
C167 0.01
C169 0.01
L162 10μH MURATA
C181 10 6.3V TA/B
R172 150k
C177 0.047
C178 0.047
C180 0.047
(E-17) Q166 REC Y PB MUTING
Q166 DTC144EU
FE (X)
FE (Y)
FE (G)
2CH B (Y)
2CH B (X)
2CH B (G)
2CH A (Y)
2CH A (X)
2CH A (G)
1CH B (X)
1CH B (Y)
1CH B (G)
1CH A (X)
1CH A (Y)
1CH A (G)
FRYING ERASE HEAD
VIDEO HEAD 2CH
VIDEO HEAD 1CH
VIDEO 5V
REC C RF
REC Y RF
RF GND
PB RF
JOG

no mark : REC/PB mode
( ) : REC mode
( ) : PB mode
＊ : Can not be measured

VS-63 BOARD(1/3)
(RP/FE)

OARD (2/3) (VIDEO)
Pa e 152)

VS-63 BOARD(1/3)



- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC	➡	➡	➡	➡
PB			⇨	⇨

VS-63 (HEAD AMP/VIDEO/SERVO/SYSTEM CONTROL), CB-32 (RELAY) PRINTED WIRING BOARDS

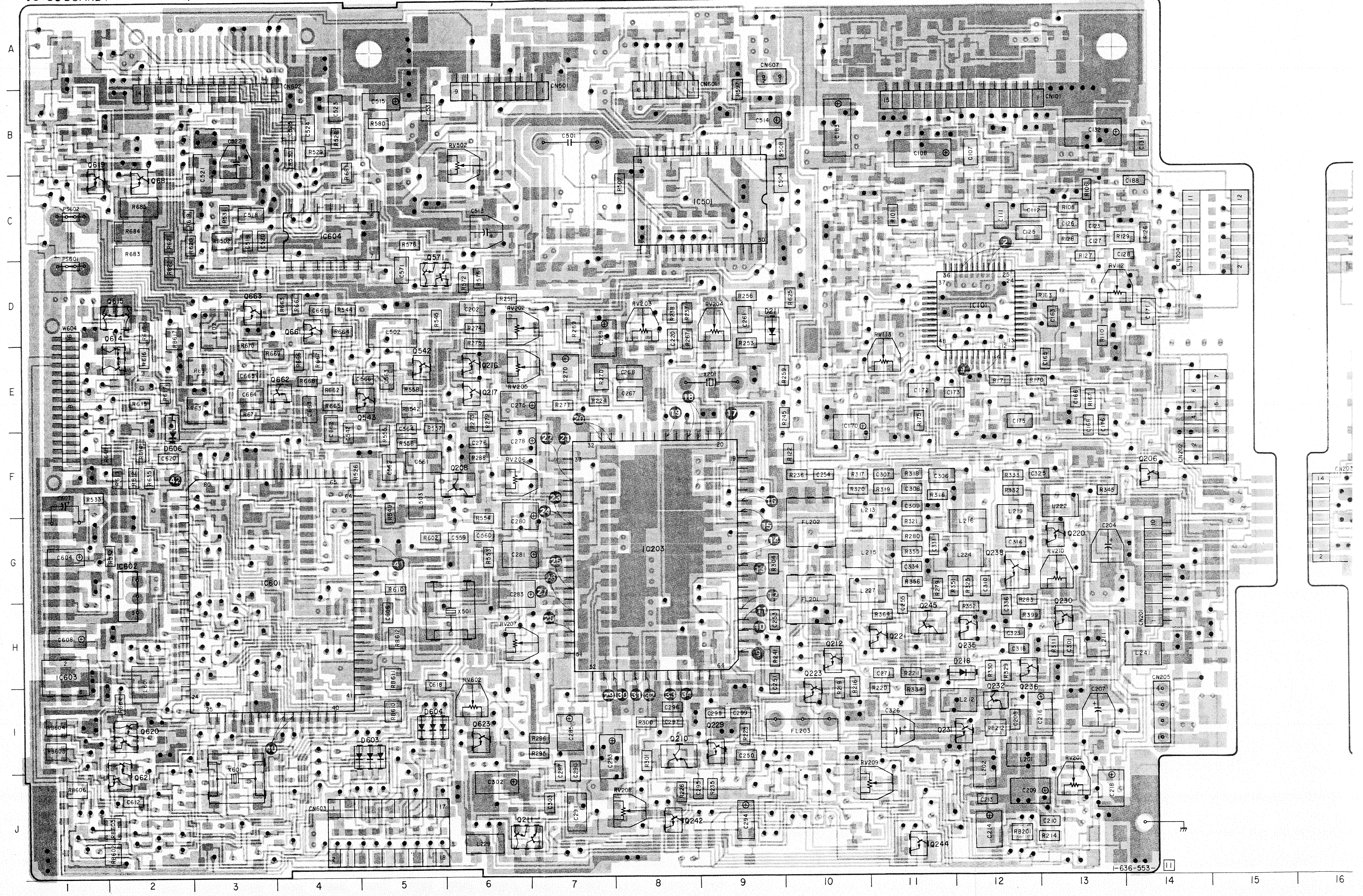
— Ref. No. VS-63, CB-32 BOARDS: 5000 series —

- **For printed wiring boards.**
- VS-63, CB-32 boards are the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- JK-67 board is replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.

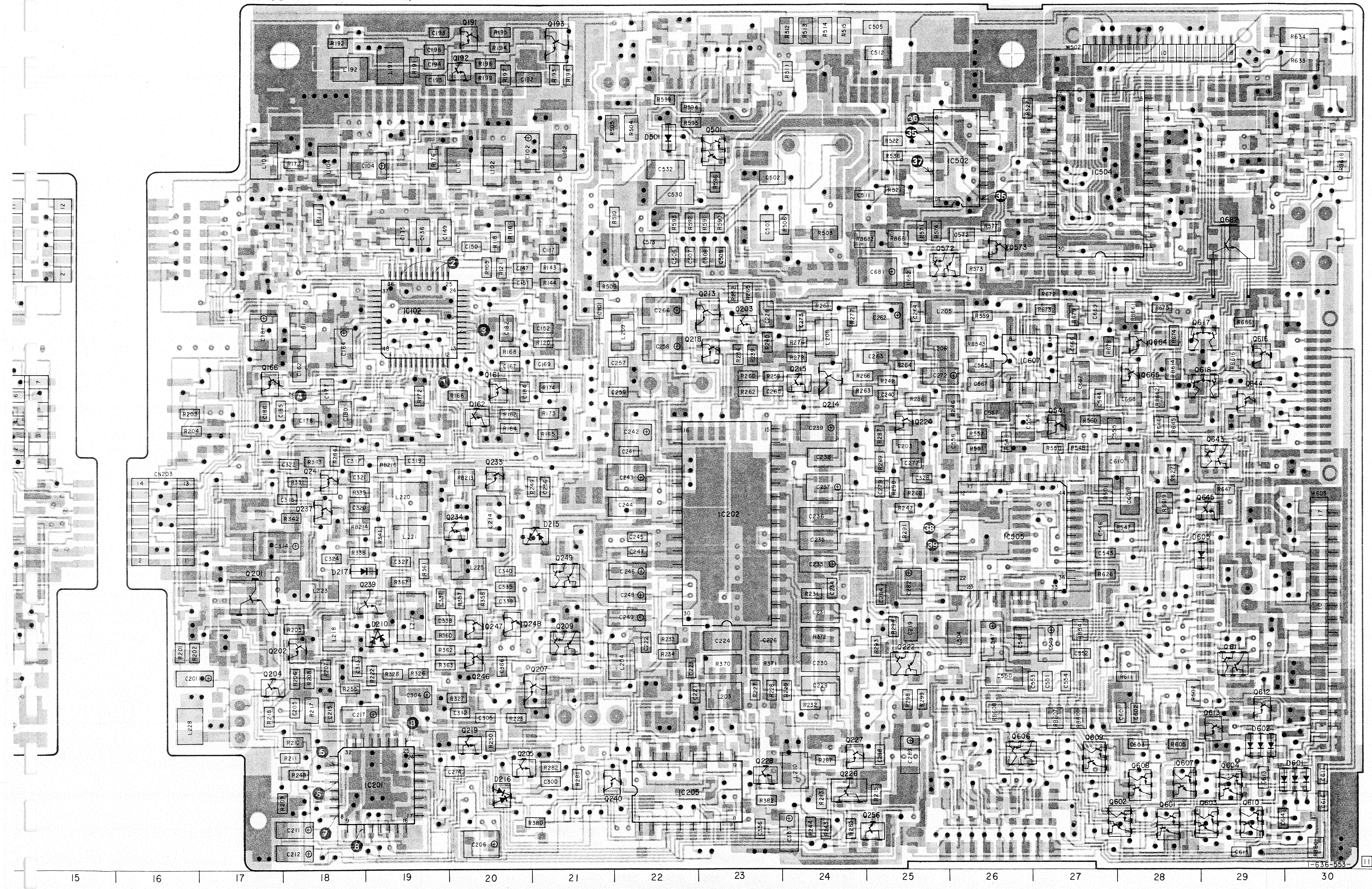
VS-63 BOARD

D210	H-19
D211	D-9
D215	G-21
D216	J-20
D217	G-18
D218	H-12
D501	B-22
D601	J-30
D602	I-29
D603	I-5
D604	I-5
D605	G-28
D606	F-2
IC101	D-12
IC102	D-19
IC201	J-19
IC202	F-23
IC203	G-8
IC205	J-22
IC501	C-7
IC502	B-26
IC504	C-27
IC505	G-26
IC601	G-3
IC602	G-2
IC603	H-1
IC604	C-4
IC607	E-26
Q161	E-12
Q162	E-12
Q166	E-17
Q191	A-20
Q192	A-20
Q193	A-21
Q201	G-17
Q202	H-18
Q203	D-23
Q204	H-17
Q205	I-20
Q206	F-14
Q207	H-21
Q208	F-6
Q209	H-21
Q210	I-8
Q211	J-6
Q212	H-10
Q213	D-23
Q214	E-24
Q215	E-24
Q216	E-6
Q217	E-6
Q218	D-23
Q219	I-20
Q220	G-13
Q221	H-11
Q222	H-25
Q223	I-10
Q224	E-25
Q226	I-24
Q227	I-24
Q228	I-23
Q229	I-9
Q230	H-13
Q231	I-12
Q232	I-12
Q233	F-20
Q234	G-20
Q235	H-12
Q236	H-12
Q237	F-18
Q238	G-12
Q239	G-18
Q240	J-21
Q241	F-18
Q242	J-8
Q244	J-11
Q245	H-11
Q246	H-20
Q247	H-20
Q248	H-20
Q249	G-21
Q256	J-25
Q501	B-23
Q541	E-27
Q542	E-5
Q543	E-5
Q571	D-5
Q572	D-25
Q573	C-26
Q601	J-28
Q602	J-28
Q603	J-29
Q604	J-29
Q606	I-26
Q607	J-28
Q608	J-28
Q609	I-27
Q610	J-29
Q611	H-29
Q612	I-29
Q613	I-29
Q614	E-2
Q615	C-2
Q616	E-29
Q617	D-28
Q618	E-28
Q619	C-1
Q620	I-2
Q621	J-2
Q623	I-6
Q643	F-29
Q644	E-29
Q645	F-28
Q661	D-4
D662	E-4
D663	D-3
D664	D-28
D665	E-28
D681	C-2
D682	C-29

VS-63 BOARD (COMPONENT SIDE)



VS-63 BOARD (CONDUCTOR SIDE)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26
27
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29
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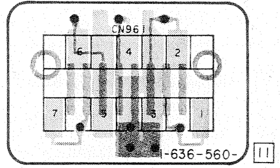
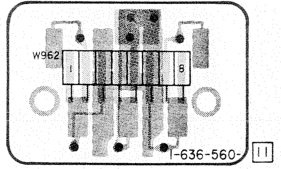
IC102
IC201
IC202
IC205
IC502
IC504
IC505
IC607
CN203
W502
W605
1-636-553-11

CB-32 BOARD (COMPONENT SIDE)


CN961
1-636-560-11

CB-32 BOARD (COMPONENT SIDE)


W962
1-636-560-11

VS-63 (HEAD AMP/VIDEO/SERVO/SYSTEM CONTROL), CB-32 (RELAY) PRINTED WIRING BOARDS

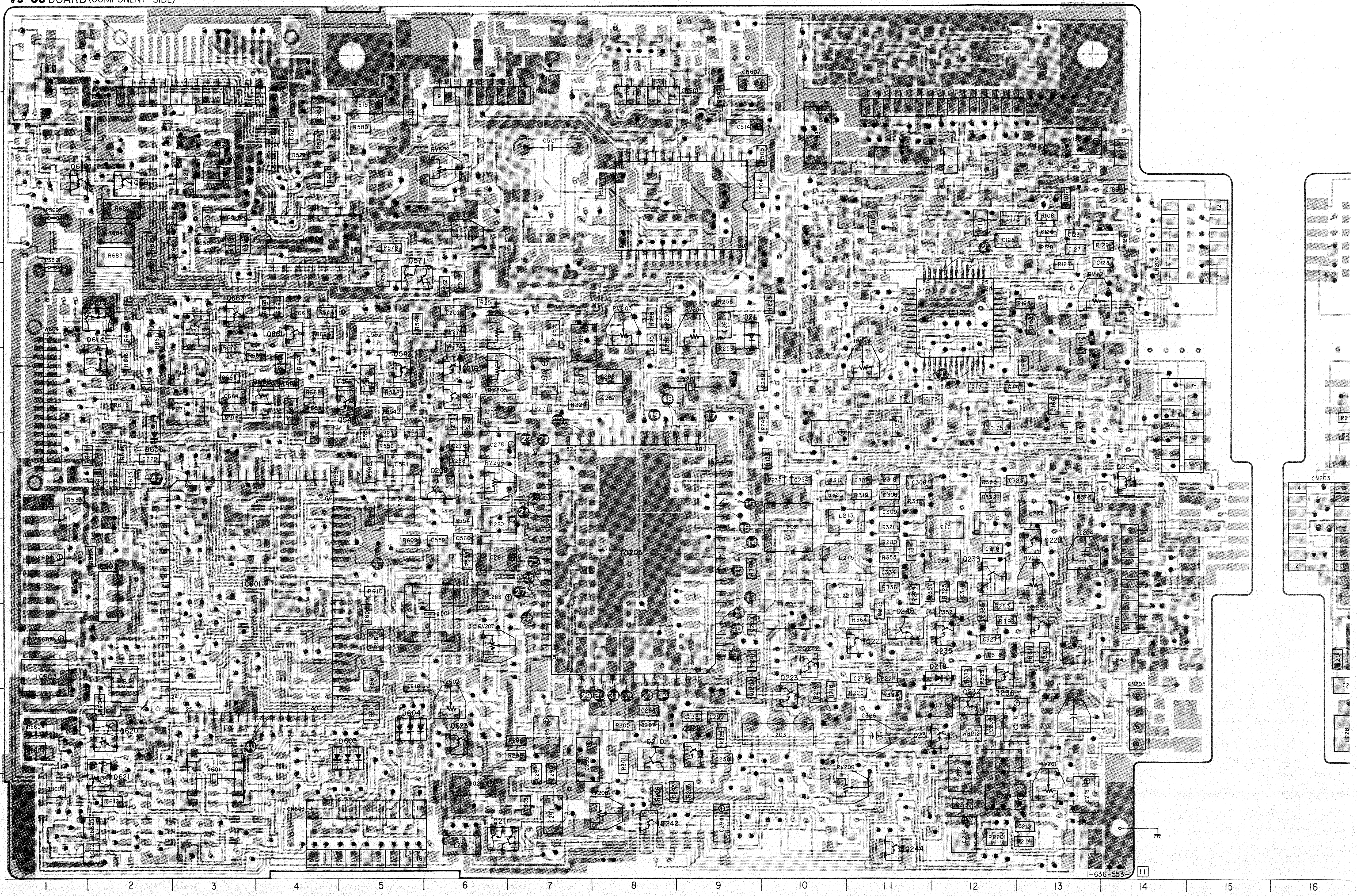
— Ref. No. VS-63, CB-32 BOARDS: 5000 series —

- **For printed wiring boards.**
- VS-63, CB-32 boards are the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- JK-67 board is replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.

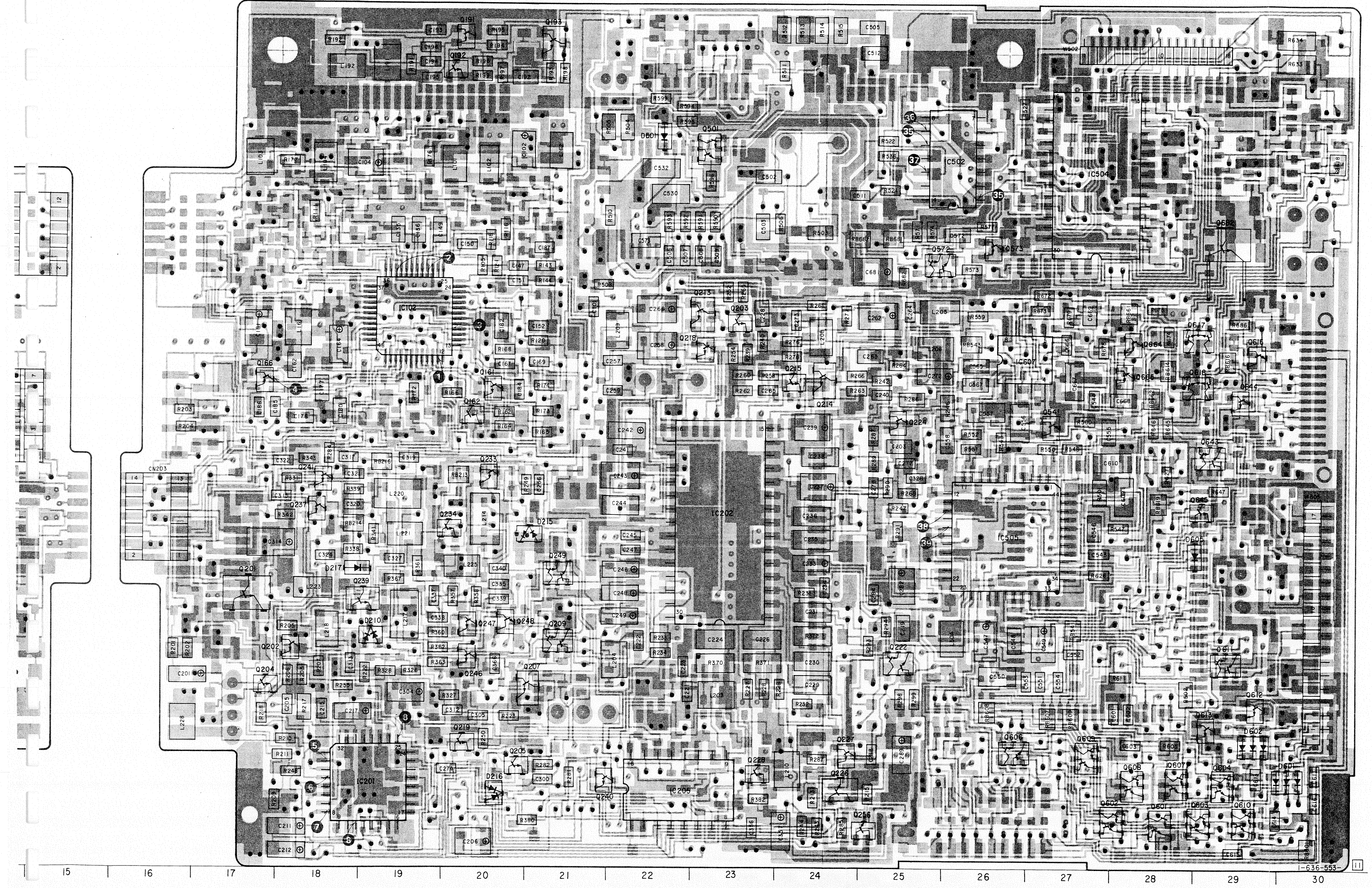
VS-63 BOARD

D210	H-19
D211	D-9
D215	G-21
D216	J-20
D217	G-18
D218	H-12
D501	B-22
D601	J-30
D602	I-29
D603	I-5
D604	I-5
D605	G-28
D606	F-2
IC101	D-12
IC102	D-19
IC201	J-19
IC202	F-23
IC203	G-8
IC205	J-22
IC501	C-7
IC502	B-26
IC504	C-27
IC505	G-26
IC601	G-3
IC602	G-2
IC603	H-1
IC604	C-4
IC607	E-26
Q161	E-12
Q162	E-12
Q166	E-17
Q191	A-20
Q192	A-20
Q193	A-21
Q201	G-17
Q202	H-18
Q203	D-23
Q204	H-17
Q205	I-20
Q206	F-14
Q207	H-21
Q208	F-6
Q209	H-21
Q210	I-8
Q211	J-6
Q212	H-10
Q213	D-23
Q214	E-24
Q215	E-24
Q216	E-6
Q217	E-6
Q218	D-23
Q219	I-20
Q220	G-13
Q221	H-11
Q222	H-25
Q223	I-10
Q224	E-25
Q226	I-24
Q227	I-24
Q228	I-23
Q229	I-9
Q230	H-13
Q231	I-12
Q232	I-12
Q233	F-20
Q234	G-20
Q235	H-12
Q236	H-12
Q237	F-18
Q238	G-12
Q239	G-18
Q240	J-21
Q241	F-18
Q242	J-8
Q244	J-11
Q245	H-11
Q246	H-20
Q247	H-20
Q248	H-20
Q249	G-21
Q256	J-25
Q501	B-23
Q541	E-27
Q542	E-5
Q543	E-5
Q571	D-5
Q572	D-25
Q573	C-26
Q601	J-28
Q602	J-28
Q603	J-29
Q604	J-29
Q606	I-26
Q607	J-28
Q608	J-28
Q609	I-27
Q610	J-29
Q611	H-29
Q612	I-29
Q613	I-29
Q614	E-2
Q615	C-2
Q616	E-29
Q617	D-28
Q618	E-28
Q619	C-1
Q620	I-2
Q621	J-2
Q623	I-6
Q643	F-29
Q644	E-29
Q645	F-28
Q661	D-4
D662	E-4
D663	D-3
D664	D-28
D665	E-28
D681	C-2
D682	C-29

VS-63 BOARD (COMPONENT SIDE)



VS-63 BOARD (CONDUCTOR SIDE)


IC102
IC201
IC202
IC205
IC504
IC505
IC607
CN203
W502
1-636-553-
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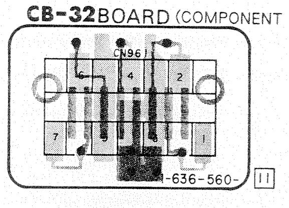
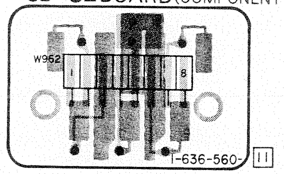
CB-32 BOARD (COMPONENT SIDE)

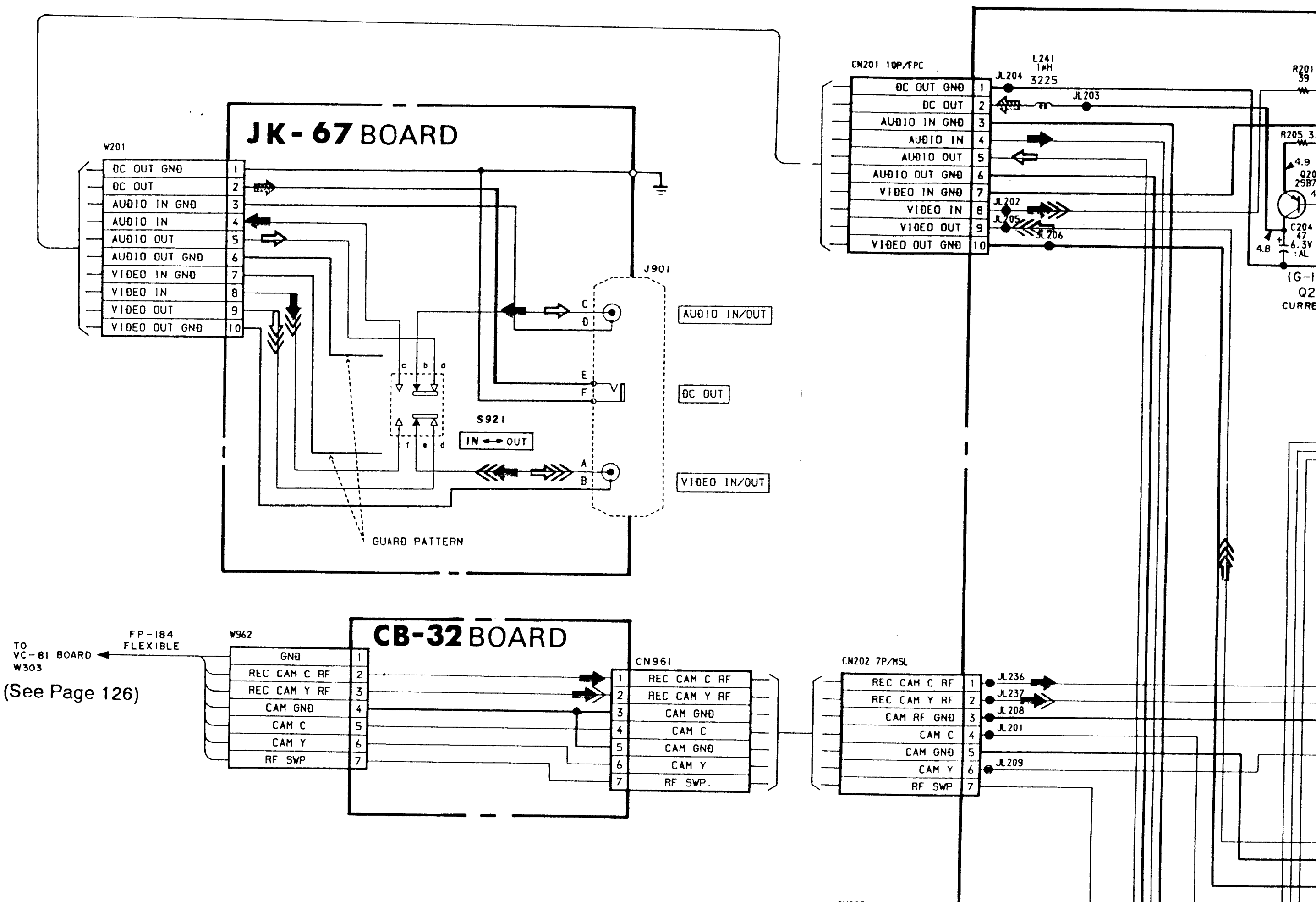

CN961
1-636-560-
11

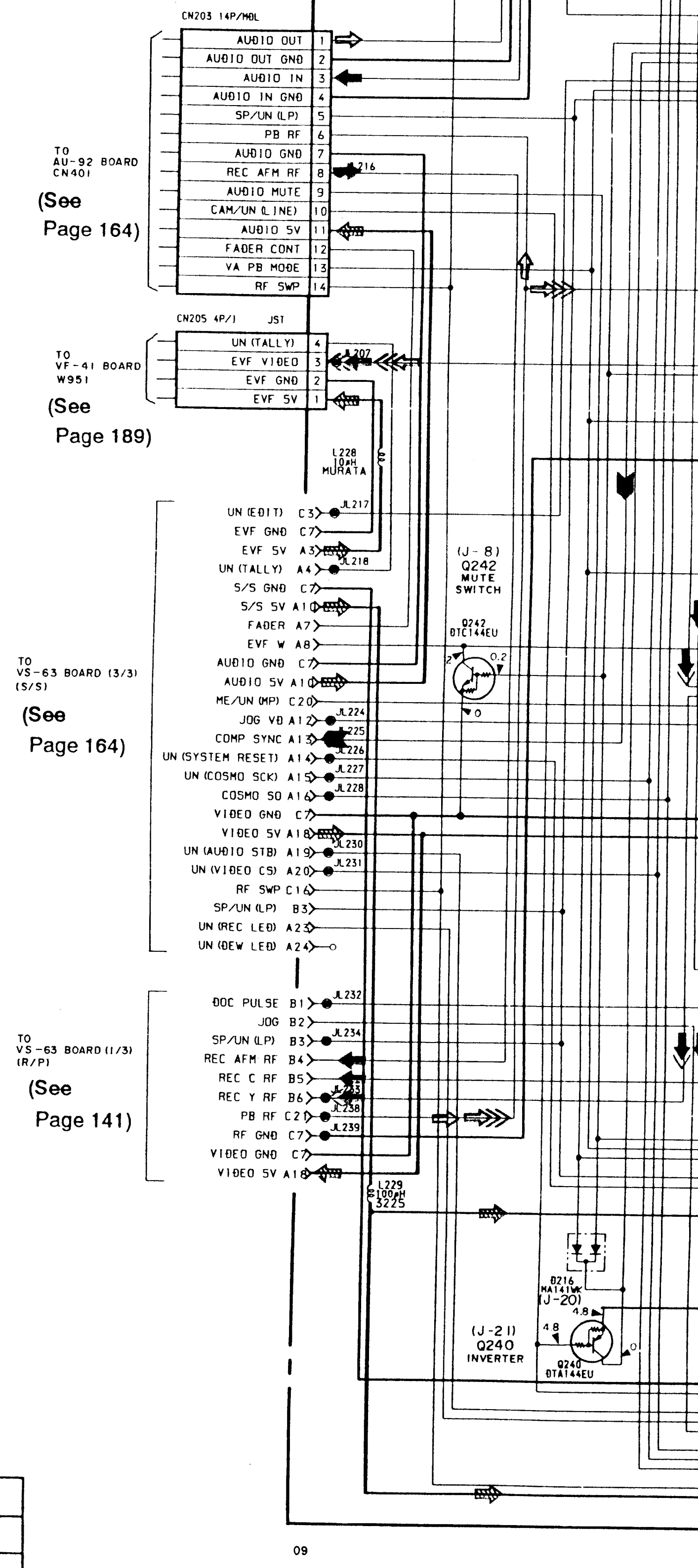
CB-32 BOARD (COMPONENT SIDE)


W962
1-636-560-
11

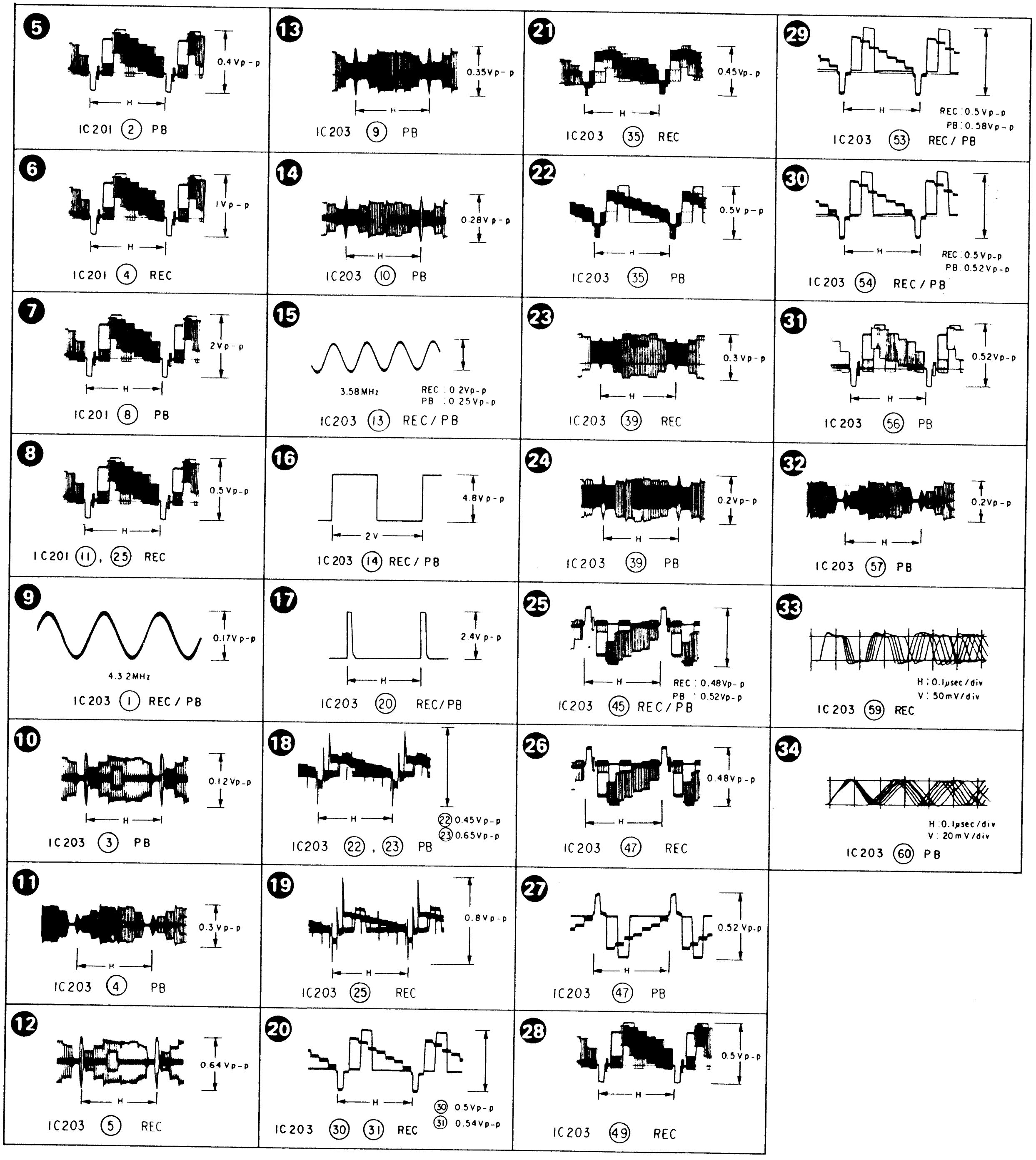
VS-63 (HEAD AMP/VIDEO/SERVO/SYSTEM CONTROL), CB-32 (RELAY), JK-67 (TERMINAL) SCHEMATIC DIAGRAMS

— Ref. No. VS-63, CB-32 BOARDS: 5000 series —


JK-67 BOARD
V201
DC OUT GND
DC OUT
AUDIO IN GND
AUDIO IN
AUDIO OUT
AUDIO OUT GND
VIDEO IN GND
VIDEO IN
VIDEO OUT
VIDEO OUT GND
J901
AUDIO IN/OUT
DC OUT
VIDEO IN/OUT
S921
IN ←→ OUT
GUARD PATTERN
CB-32 BOARD
TO VC-81 BOARD W303
FP-184 FLEXIBLE
W962
(See Page 126)
GND
REC CAM C RF
REC CAM Y RF
CAM GND
CAM C
CAM Y
RF SWP
CN961
CN201 10P/FPC
L241 1μH 3225
JL204
JL203
JL202
JL205
JL206
R201 39
R205
C204 47 6.3V :AL
Q20
CURRE
CN202 7P/MSL
REC CAM C RF
REC CAM Y RF
CAM RF GND
CAM C
CAM GND
CAM Y
RF SWP
JL236
JL237
JL208
JL201
JL209


CN203 14P/MOL
TO AU-92 BOARD CN401
(See Page 164)
AUDIO OUT
AUDIO OUT GND
AUDIO IN
AUDIO IN GND
SP/UN (LP)
PB RF
AUDIO GND
REC AFM RF
AUDIO MUTE
CAM/UN (LINE)
AUDIO 5V
FADER CONT
VA PB MODE
RF SWP
JL216
CN205 4P/I JST
TO VF-41 BOARD W951
(See Page 189)
UN (TALLY)
EVF VIDEO
EVF GND
EVF 5V
JL207
L228 10μH MURATA
TO VS-63 BOARD (3/3) (S/S)
(See Page 164)
UN (EDIT) C3
EVF GND C7
EVF 5V A3
UN (TALLY) A4
S/S GND C7
S/S 5V A10
FADER A7
EVF W A8
AUDIO GND C7
AUDIO 5V A10
ME/UN (MP) C20
JOG VD A12
COMP SYNC A13
UN (SYSTEM RESET) A14
UN (COSMO SCK) A15
COSMO SO A16
VIDEO GND C7
VIDEO 5V A18
UN (AUDIO STB) A19
UN (VIDEO CS) A20
RF SWP C16
SP/UN (LP) B3
UN (REC LED) A23
UN (DEW LED) A24
JL217
JL218
JL224
JL225
JL226
JL227
JL228
JL230
JL231
TO VS-63 BOARD (1/3) (R/P)
(See Page 141)
DOC PULSE B1
JOG B2
SP/UN (LP) B3
REC AFM RF B4
REC C RF B5
REC Y RF B6
PB RF C21
RF GND C7
VIDEO GND C7
VIDEO 5V A18
JL232
JL234
JL233
JL238
JL239
L229 100μH 3225
(J-8) Q242 MUTE SWITCH
Q242 DTC144EU
(J-21) Q240 INVERTER
Q240 DTA144EU
D216 MA141WK
09

VS-63 BOARD (2/3)

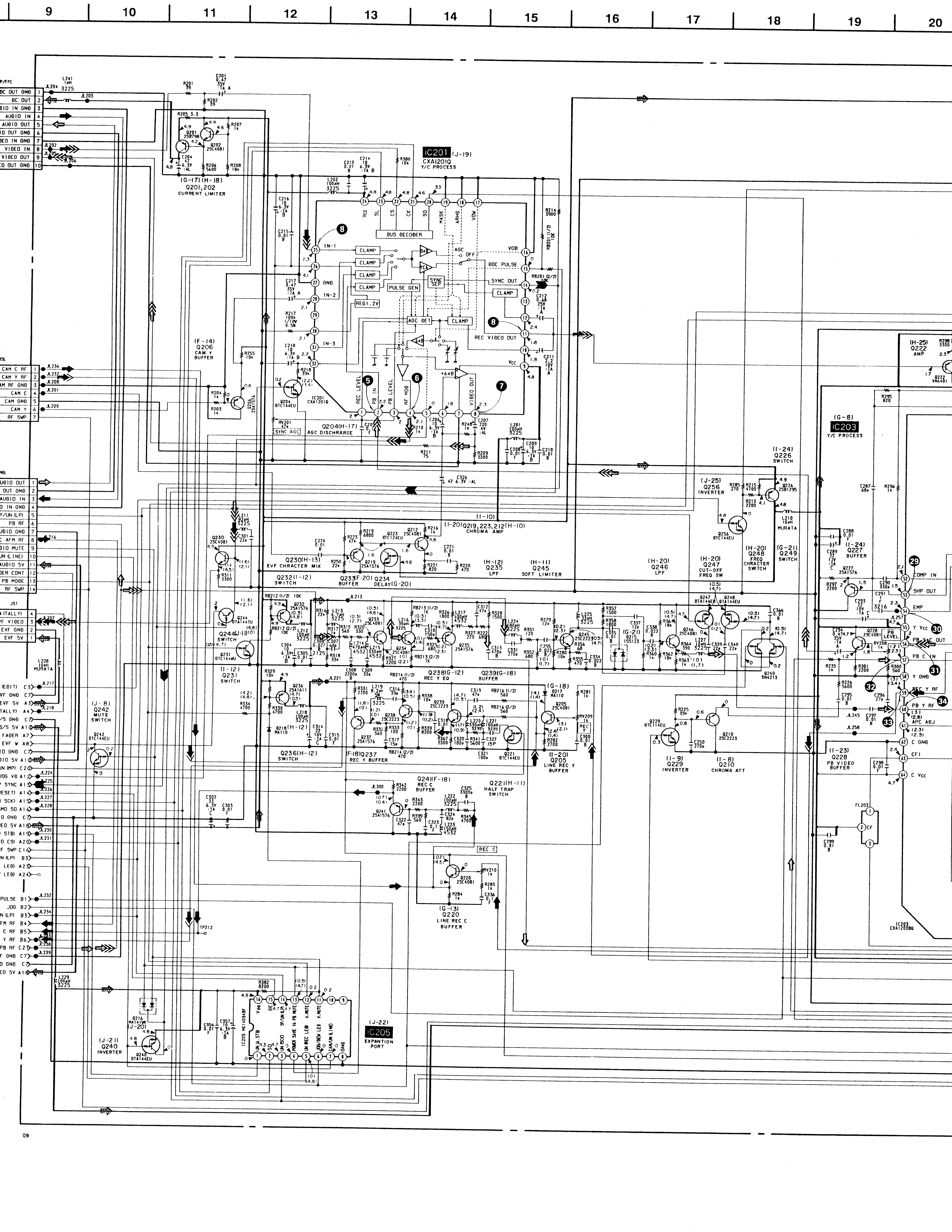


- SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC	➡	➡»	➡»»	➡
PB	⇨	⇨»	⇨»»	⇨

- SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal	➤		


9
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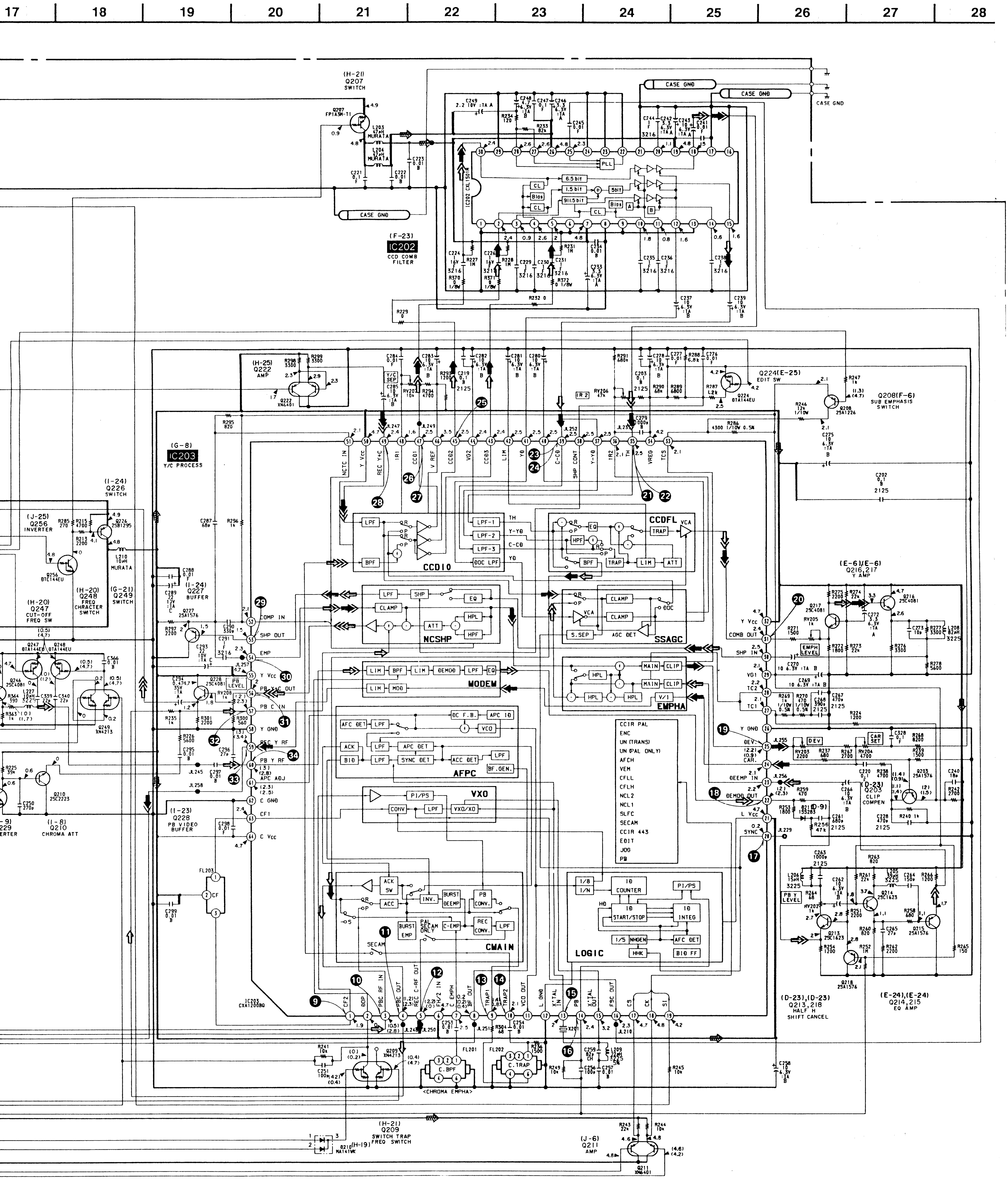
14
15
16
17
18
19
20
IC201 (J-19)
CXA1201Q
Y/C PROCESS
(G-17)(H-18)
Q201,202
CURRENT LIMITER
BUS DECODER
CLAMP
PULSE GEN
REG1.2V
SYNC SEP
AGC DET
AGC OFF
VOB
DOC PULSE
SYNC OUT
REC VIDEO OUT
IN-1
IN-2
IN-3
GND
Vcc
REC LEVEL
PB IN
PB LEVEL
RF MOD
VIDEO OUT
(F-14)
Q206
CAM Y
BUFFER
Q204(H-17)
AGC DISCHARGE
SYNC AGC
(I-20)Q219,223,212(H-10)
CHROMA AMP
Q230(H-13)
EVF CHRACTER MIX
Q232(I-12)
SWITCH
Q233(F-20) Q234
BUFFER DELAY(G-20)
(H-12)
Q235
LPF
(H-11)
Q245
SOFT LIMITER
(H-20)
Q246
LPF
(H-20)
Q247
CUT-OFF
FREQ SW
(H-20)
Q248
FREQ
CHRACTER
SWITCH
(G-21)
Q249
SWITCH
(J-25)
Q256
INVERTER
(I-24)
Q226
SWITCH
Q244(J-11)
SWITCH
(I-12)
Q231
SWITCH
(J-8)
Q242
MUTE
SWITCH
Q238(G-12)
REC Y EQ
Q239(G-18)
BUFFER
Q236(H-12)
SWITCH
(F-18)Q237
REC Y BUFFER
(I-20)
Q205
LINE REC Y
BUFFER
Q241(F-18)
REC C
BUFFER
Q221(H-11)
HALF TRAP
SWITCH
(G-13)
Q220
LINE REC C
BUFFER
REC C
TP212
(I-9)
Q229
INVERTER
(I-8)
Q210
CHROMA ATT
(G-8)
IC203
Y/C PROCESS
IC203
CXA1200BQ
(H-25)
Q222
AMP
(I-24)
Q227
BUFFER
(I-23)
Q228
PB VIDEO
BUFFER
COMP IN
SHP OUT
EMP
Y Vcc
PB Y/C OUT
PB C IN
Y GND
REC Y RF
PB Y RF
APC ADJ
C GND
CF1
C Vcc
PB LEVEL
FL203
CF
(J-22)
IC205
EXPANTION
PORT
IC205 MC14094BF
(J-21)
Q240
INVERTER
D216
MA141WK
(J-20)
DC OUT GND
DC OUT
AUDIO IN GND
AUDIO IN
AUDIO OUT
VIDEO IN
VIDEO OUT GND
CAM C RF
CAM Y RF
CAM RF GND
CAM C
CAM GND
CAM Y
RF SWP
AUDIO OUT
PB RF
AUDIO GND
AFM RF
AUDIO MUTE
AUDIO 5V
PB MODE
RF SWP
EVF VIDEO
EVF GND
EVF 5V
L241 1mH 3225
L202 100μH 3225
L201 100μH 3225
L211 82μH 3225
L229 100μH 3225
L210 10μH MURATA
L228 10μH MURATA
09


17
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28
(H-21) Q207 SWITCH
CASE GND
(F-23) IC202 CCD COMB FILTER
IC202 CXL1501M
PLL
6.5 bit
1.5 bit
9/1.5 bit
5bit
Bias
CL
(H-25) Q222 AMP
(G-8) IC203 Y/C PROCESS
Q224 (E-25) EDIT SW
Q208 (F-6) SUB EMPHASIS SWITCH
(I-24) Q226 SWITCH
(J-25) Q256 INVERTER
(H-20) Q248 FREQ CHRACTER SWITCH
(G-21) Q249 SWITCH
(H-20) Q247 CUT-OFF FREQ SW
(I-24) Q227 BUFFER
CCD10
CCDFL
NCSHP
SSAGC
MODEM
EMPHA
AFPC
VXO
CMAIN
LOGIC
CCIR PAL
ENC
UN (TRANS)
UN (PAL ONLY)
AFCH
VEM
CFLL
CFLH
NCL2
NCL1
SLFC
SECAM
CCIR 443
EDIT
JOG
PB
(E-6),(E-6) Q216,217 Y AMP
(D-23) Q203 CLIP COMPEN
(I-8) Q210 CHROMA ATT
(I-23) Q228 PB VIDEO BUFFER
FL203
IC203 CXA1200BQ
<CHROMA EMPHA>
C.BPF
C.TRAP
FL201
FL202
(H-21) Q209 SWITCH TRAP FREQ SWITCH
D210 (H-19) MA141WK
(J-6) Q211 AMP
(D-23),(D-23) Q213,218 HALF H SHIFT CANCEL
(E-24),(E-24) Q214,215 EQ AMP

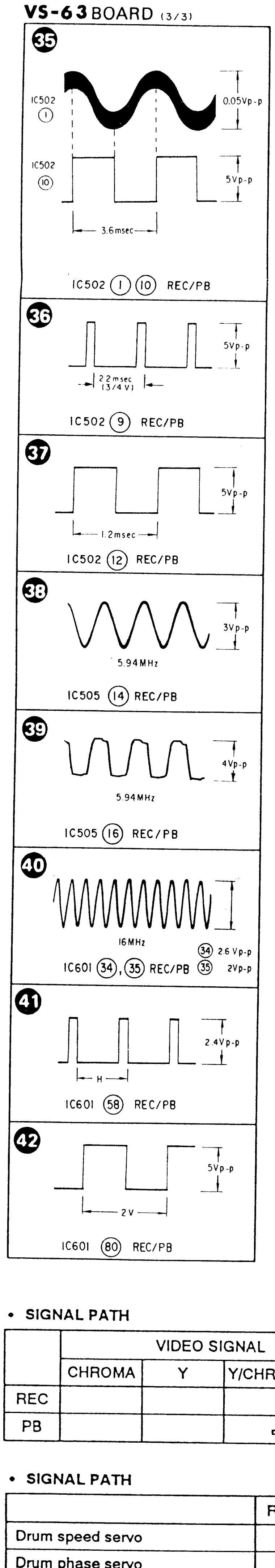
no mark : REC/PB mode
( ) : REC mode
( ) : PB mode
* : can not be measured

VS-63 BOARD (2/3)
(VIDEO)

VS-63 (HEAD AMP/VIDEO/SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAM

— Ref. No. VS-63 BOARD: 5000 series —

VS-63 BOARD (3/3)

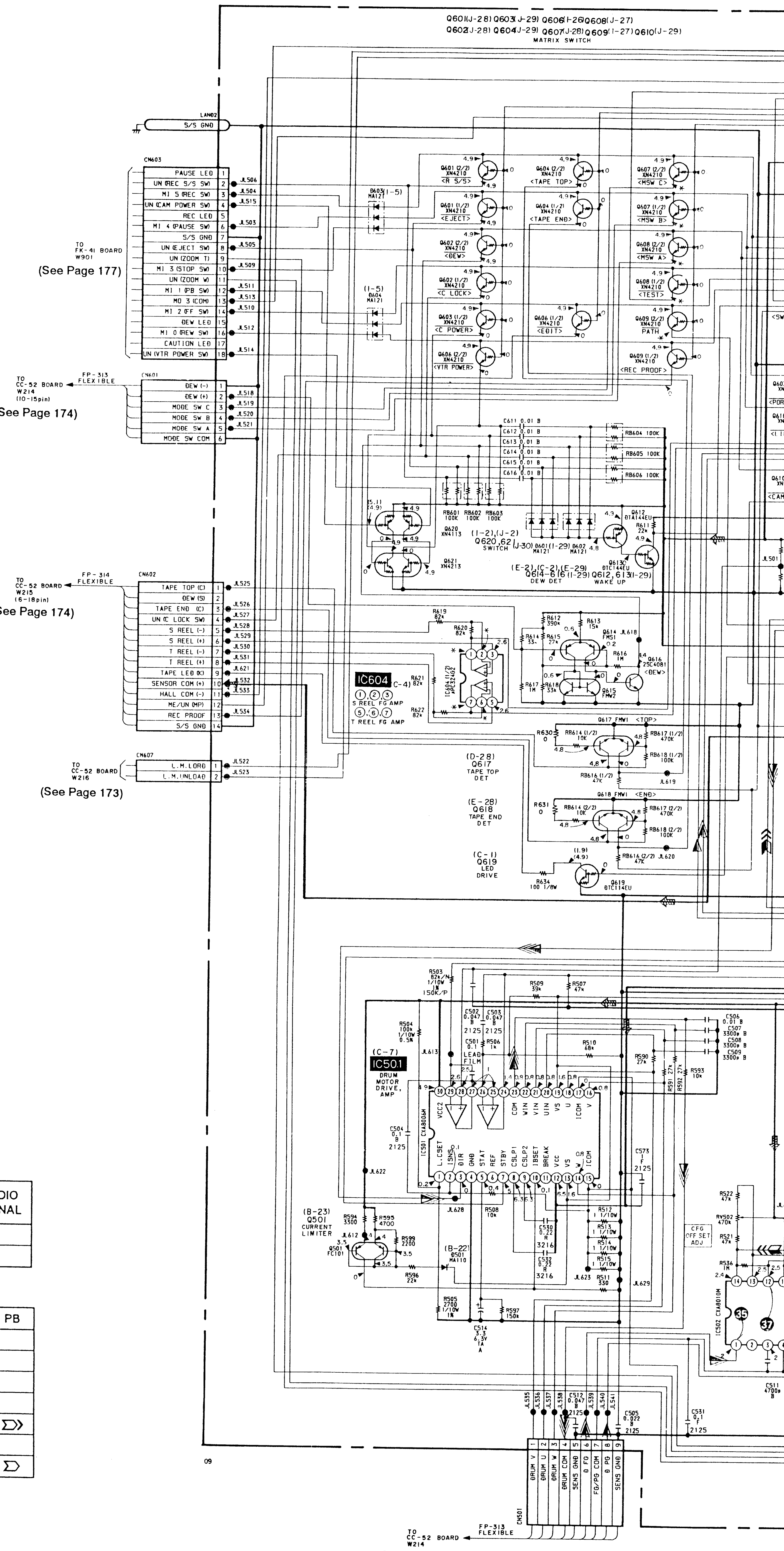


- SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC				
PB			⇨	

- SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		⇛	
Drum servo (speed and phase)		⇛	
Capstan speed servo			
Capstan phase servo			⊃〉
Capstan servo (speed and phase)		⊃〉〉	
Ref. signal	➧		▷



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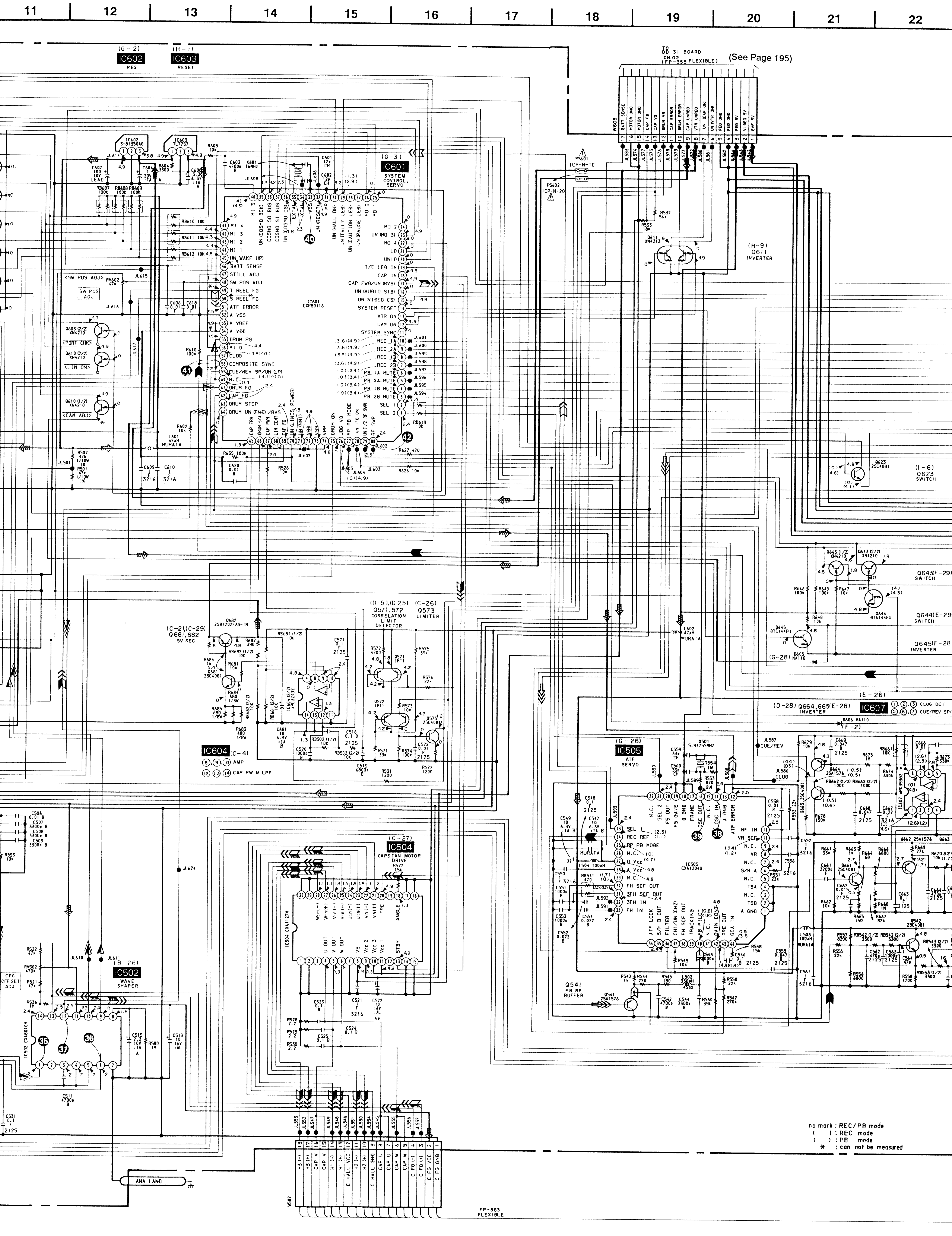
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
Q601(J-28) Q603(J-29) Q606(I-26) Q608(J-27)
Q602(J-28) Q604(J-29) Q607(J-28) Q609(I-27) Q610(J-29)
MATRIX SWITCH
LAN02
S/S GND
CN603
PAUSE LED
UN REC S/S SW
MI 5 REC SW
UN CAM POWER SW
REC LED
MI 4 PAUSE SW
S/S GND
UN EJECT SW
UN ZOOM T
MI 3 STOP SW
UN ZOOM W
MI 1 PB SW
MO 3 COM
MI 2 FF SW
DEW LED
MI 0 REW SW
CAUTION LED
UN VTR POWER SW
TO FK-41 BOARD W901
(See Page 177)
TO CC-52 BOARD W214 (10-15pin)
FP-313 FLEXIBLE
(See Page 174)
CN601
DEW (-)
DEW (+)
MODE SW C
MODE SW B
MODE SW A
MODE SW COM
TO CC-52 BOARD W215 (6-18pin)
FP-314 FLEXIBLE
(See Page 174)
CN602
TAPE TOP (C)
DEW (S)
TAPE END (C)
UN C LOCK SW
S REEL (-)
S REEL (+)
T REEL (-)
T REEL (+)
TAPE LED
SENSOR COM (+)
HALL COM (-)
ME/UN (MP)
REC PROOF
S/S GND
CN607
L.M.LOAD
L.M.UNLOAD
TO CC-52 BOARD W216
(See Page 173)
Q601 (2/2) XN4210 <R S/S>
Q601 (1/2) XN4210 <EJECT>
Q602 (2/2) XN4210 <DEW>
Q602 (1/2) XN4210 <C LOCK>
Q603 (1/2) XN4210 <C POWER>
Q606 (2/2) XN4210 <VTR POWER>
Q604 (2/2) XN4210 <TAPE TOP>
Q604 (1/2) XN4210 <TAPE END>
Q606 (1/2) XN4210 <EDIT>
Q607 (2/2) XN4210 <MSW C>
Q607 (1/2) XN4210 <MSW B>
Q608 (2/2) XN4210 <MSW A>
Q608 (1/2) XN4210 <TEST>
Q609 (2/2) XN4210 PATH
Q609 (1/2) XN4210 <REC PROOF>
Q603 (I-5) MA121
(I-5) Q604 MA121
C611 0.01 B
C612 0.01 B
C613 0.01 B
C614 0.01 B
C615 0.01 B
C616 0.01 B
RB604 100K
RB605 100K
RB606 100K
RB601 100K
RB602 100K
RB603 100K
Q620 XN4113
Q621 XN4213
(I-21),(J-2) Q620,621 SWITCH
(J-30) D601 (I-29) D602 MA121
Q612 DTA144EU
R611 22k
Q613 DTC144EU
(E-21),(C-21),(E-29) Q614-616 (I-29) Q612,613 (I-29)
DEW DET
WAKE UP
R619 82k
R620 82k
R612 390k
R613 15k
R614 33k
R615 27k
Q614 FMS1
Q616 2SC4081 <DEW>
R616 1M
R617 1M
R618 33k
Q615 FMW2
IC604
(C-4)
①,②,③ S REEL FG AMP
⑤,⑥,⑦ T REEL FG AMP
R621 82k
R622 82k
Q617 FMW1 <TOP>
R630 0
RB614 (1/2) 10K
RB617 (1/2) 470K
RB618 (1/2) 100K
RB616 (1/2) 47K
(D-28) Q617 TAPE TOP DET
Q618 FMW1 <END>
R631 0
RB614 (2/2) 10K
RB617 (2/2) 470K
RB618 (2/2) 100K
RB616 (2/2) 47K
(E-28) Q618 TAPE END DET
(C-1) Q619 LED DRIVE
R634 100 1/8W
Q619 DTC114EU
R503 82k/N 1/10W 1N 150K/P
R509 39k
R507 47k
R504 100k 1/10W 0.5N
C502 0.047 B 2125
C503 0.047 B 2125
C501 0.1 B
R506 1k
LEAD FILM
R510 68k
R590 27k
R591 27k
R592 27k
R593 10k
C506 0.01 B
C507 3300p B
C508 3300p B
C509 3300p B
(C-7) IC501
DRUM MOTOR DRIVE, AMP
IC501 CXA8006M
VCC2
COM
WIN
VIN
UIN
VS
ICOM
V
L.CSET
ISNS
DIR
GND
STAT
REF
STBY
CSLP1
CSLP2
IBSET
BREAK
VCC
VS
ICOM
C504 0.1 B 2125
C573 1 F 2125
(B-23) Q501 CURRENT LIMITER
Q501 FC101
R594 3300
R595 4700
R599 2200
R596 22k
R508 10k
C530 0.22 R 3216
(B-22) D501 MA110
C532 0.22 R 3216
R512 1 1/10W
R513 1 1/10W
R514 1 1/10W
R515 1 1/10W
R511 330
R505 2700 1/10W 1N
R597 150k
C514 3.3 6.3V TA A
CFG OFF SET ADJ
R522 47k
RV502 470k
R521 47k
R536 1M
IC502 CXA8010M
C511 4700p B
C512 0.047 B 2125
C505 0.022 B 2125
C531 0.1 F 2125
CN501
DRUM V
DRUM U
DRUM W
DRUM COM
SENS GND
D FG
FG/PG COM
D PG
SENS GND
TO CC-52 BOARD W214
FP-313 FLEXIBLE
(See Page 174)
09


11
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21
22
(G-2) IC602 REG
(H-1) IC603 RESET
IC602 S-81350AG
IC603 TL7757
TO DD-31 BOARD CN102 (FP-355 FLEXIBLE)
(See Page 195)
W605
BATT SENSE
MOTOR GND
MOTOR GND
CAP FG
DRUM VS
DRUM GND
CAP ERROR
VTR UNREG
UN (CAM ON)
UN (VTR ON)
REG GND
REG GND
VIDEO 5V
EVF 5V
PS601 ICP-N-1C
PS602 ICP-N-20
(G-3) IC601 SYSTEM CONTROL, SERVO
IC601 CXP80116
X601 16MHz
(H-9) Q611 INVERTER
Q611 XN4213
SW POS ADJ
RV602
BATT SENSE
STILL ADJ
SW POS ADJ
T REEL FG
S REEL FG
ATF ERROR
A VSS
A VREF
A VDD
DRUM PG
MI 0
CLOG
COMPOSITE SYNC
CUE/REV SP/UN (LP)
DRUM FG
CAP FG
DRUM STEP
DRUM UN (FWD) /RVS
MO 2
UN (MO 3)
MO 4
LO
UNLO
T/E LED ON
CAP ON
CAP FWD/UN (RVS)
UN (AUDIO STB)
UN (VIDEO CS)
SYSTEM RESET
VTR ON
CAM ON
SYSTEM SYNC
REC 1A
REC 2A
REC 1B
REC 2B
PB 1A MUTE
PB 2A MUTE
PB 1B MUTE
PB 2B MUTE
SEL 1
SEL 2
<PORT CHK>
<LIM ON>
<CAM ADJ>
Q603 XN4210
Q610 XN4210
L601 47μH MURATA
(C-2),(C-29) Q681,682 5V REG
Q682 2SB1202FAS-TM
Q681 2SC4081
(D-5),(D-25) Q571,572 CORRELATION LIMIT DETECTOR
(C-26) Q573 LIMITER
Q571 IMT1
Q572 IMT1
Q573 2SC4081
IC604 (C-4)
⑧,⑨,⑩ AMP
⑫ ⑬ ⑭ CAP PW M LPF
IC604 UPC3240Z
(C-27) IC504 CAPSTAN MOTOR DRIVE
IC504 CXA1127M
(B-26) IC502 WAVE SHAPER
IC502 CXA8010M
CFG OFFSET ADJ
RV502
ANA LAND
W502
H3 (-)
H3 (+)
CAP V
CAP V
H1 (+)
C HALL VCC
H2 (+)
C HALL GND
CAP U
CAP U
CAP W
CAP W
C FG (+)
C FG VCC
C FG GND
FP-363 FLEXIBLE
(G-26) IC505 ATF SERVO
IC505 CXA1204Q
X501 5.94755MHz
Q541 PB RF BUFFER
Q541 2SA1576
L602 47μH MURATA
L503 100μH MURATA
(I-6) Q623 SWITCH
Q623 2SC4081
Q643 (F-29) SWITCH
Q644 (E-29) SWITCH
Q645 (F-28) INVERTER
Q643 XN4210
Q644 DTA144EU
Q645 DTC144EU
(G-28) MA110
(E-26)
(D-28) Q664,665 (E-28) INVERTER
IC607 ①,②,③ CLOG DET ⑤,⑥,⑦ CUE/REV SP
IC607 UPC393G2
D406 MA110 (F-2)
JL587 CUE/REV
JL586 CLOG
Q664 2SA1576
Q661 2SC4081
Q542 2SC4081
35
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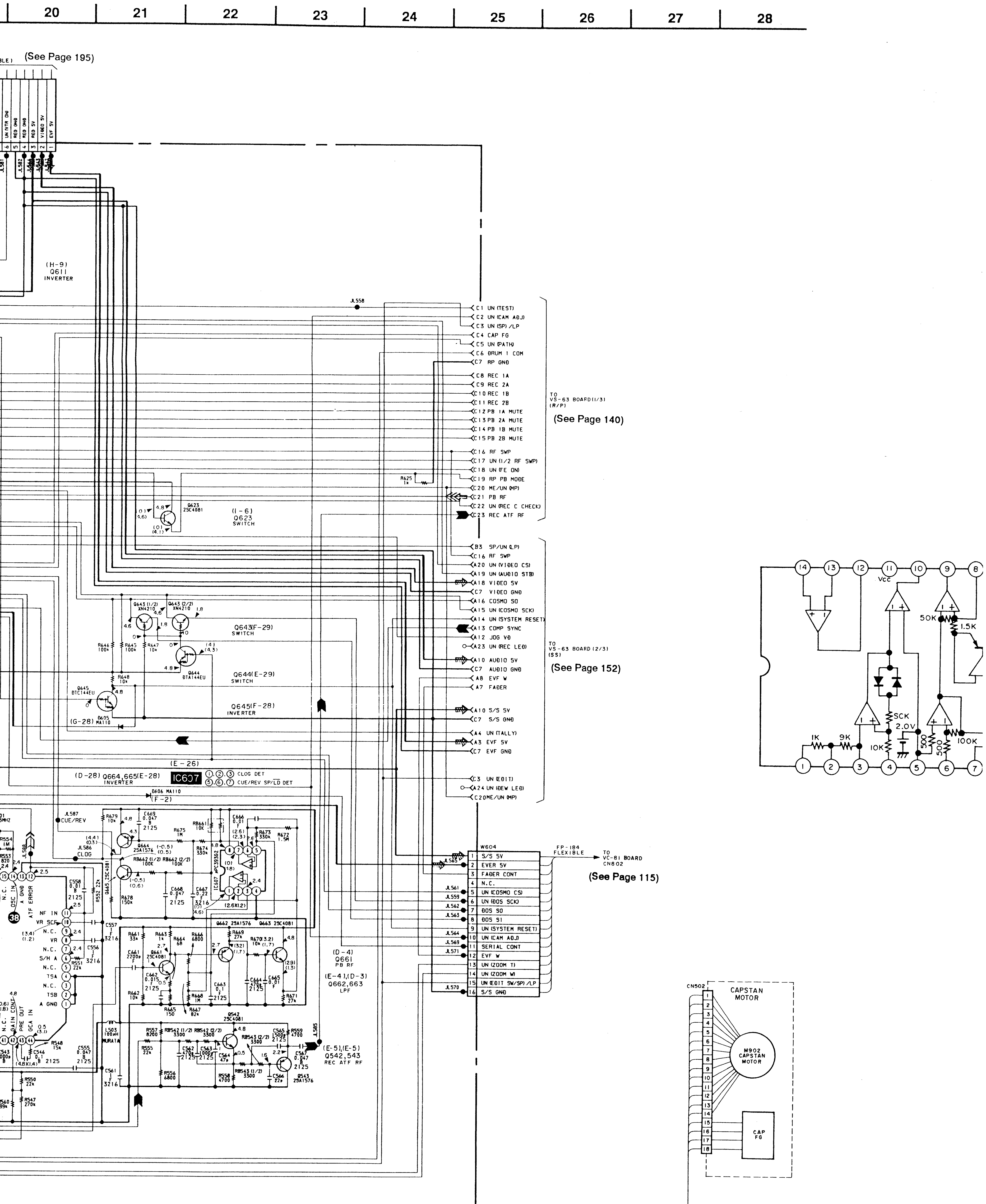
42

no mark : REC/PB mode
( ) : REC mode
( ) : PB mode
* : can not be measured

SERVO/SYSTEM CONTR



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25
26
27
28
(See Page 195)
6 UN VTR ON
5 REG GND
4 REG GND
3 REG 5V
2 VIDEO 5V
1 EVF 5V
(H-9) Q611 INVERTER
C1 UN (TEST)
C2 UN (CAM ADJ)
C3 UN (SP)/LP
C4 CAP FG
C5 UN (PATH)
C6 DRUM 1 COM
C7 RP GND
C8 REC 1A
C9 REC 2A
C10 REC 1B
C11 REC 2B
C12 PB 1A MUTE
C13 PB 2A MUTE
C14 PB 1B MUTE
C15 PB 2B MUTE
C16 RF SWP
C17 UN (1/2 RF SWP)
C18 UN (FE ON)
C19 RP PB MODE
C20 ME/UN (MP)
C21 PB RF
C22 UN (REC C CHECK)
C23 REC ATF RF
TO VS-63 BOARD (1/3) (R/P)
(See Page 140)
B3 SP/UN (LP)
C16 RF SWP
A20 UN (VIDEO CS)
A19 UN (AUDIO STB)
A18 VIDEO 5V
C7 VIDEO GND
A16 COSMO SO
A15 UN (COSMO SCK)
A14 UN (SYSTEM RESET)
A13 COMP SYNC
A12 JOG VD
A23 UN (REC LED)
A10 AUDIO 5V
C7 AUDIO GND
A8 EVF W
A7 FADER
A10 S/S 5V
C7 S/S GND
A4 UN (TALLY)
A3 EVF 5V
C7 EVF GND
C3 UN (EOIT)
A24 UN (DEW LED)
C20 ME/UN (MP)
TO VS-63 BOARD (2/3) (SS)
(See Page 152)
Q623 2SC4081
(I-6) Q623 SWITCH
Q643(F-29) SWITCH
Q644(E-29) SWITCH
Q645(F-28) INVERTER
(G-28) D605 MA110
(E-26)
(D-28) Q664,665(E-28) INVERTER
IC607
①②③ CLOG DET
⑤⑥⑦ CUE/REV SP/LD DET
D606 MA110 (F-21)
JL587 CUE/REV
JL586 CLOG
Q664 2SA1576
Q665 2SC4081
IC607 μPC393G2
Q662 2SA1576
Q663 2SC4081
Q661 2SC4081
(D-4) Q661 PB RF
(E-4),(D-3) Q662,663 LPF
Q542 2SC4081
Q543 2SA1576
(E-5),(E-5) Q542,543 REC ATF RF
L503 100μH MURATA
OSC IN
ATF ERROR
A GND
NF IN
VR SCF
N.C.
VR
S/H A
TSA
TSB
GAIN CONT
PRE OUT
GCA IN
38
W604
1 S/S 5V
2 EVER 5V
3 FADER CONT
4 N.C.
5 UN (COSMO CS)
6 UN (DOS SCK)
7 DOS SO
8 DOS SI
9 UN (SYSTEM RESET)
10 UN (CAM ADJ)
11 SERIAL CONT
12 EVF W
13 UN (ZOOM T)
14 UN (ZOOM W)
15 UN (EOIT SW/SP)/LP
16 S/S GND
FP-184 FLEXIBLE
TO VC-81 BOARD CN802
(See Page 115)
CN502
CAPSTAN MOTOR
M902 CAPSTAN MOTOR
CAP FG
Vcc
50K
1.5K
SCK
2.0V
1K
9K
10K
500
500
100K

VS-63 BOARD (3/3)

(SS)

no mark : REC/PB mode
( ) : REC mode
( ) : PB mode
* : can not be measured

VS-63 (HEAD AMP/VIDEO/SERVO/SYSTEM CONTROL), CB-32 (RELAY) PRINTED WIRING BOARDS

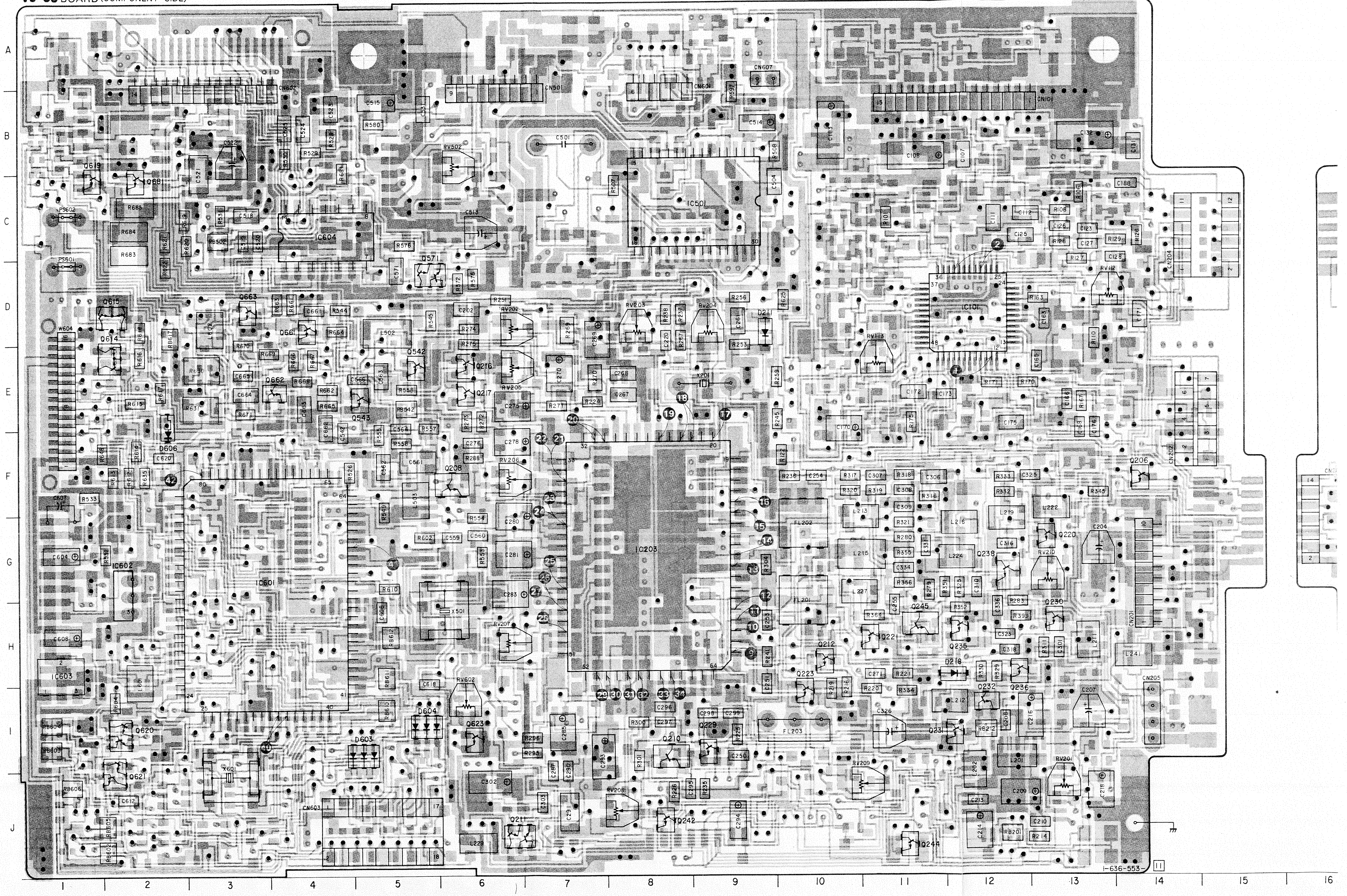
— Ref. No. VS-63, CB-32 BOARDS: 5000 series —

- **For printed wiring boards.**
- VS-63, CB-32 boards are the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- JK-67 board is replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.

VS-63 BOARD

D210	H-19
D211	D-9
D215	G-21
D216	J-20
D217	G-18
D218	H-12
D501	B-22
D601	J-30
D602	I-29
D603	I-5
D604	I-5
D605	G-28
D606	F-2
IC101	D-12
IC102	D-19
IC201	J-19
IC202	F-23
IC203	G-8
IC205	J-22
IC501	C-7
IC502	B-26
IC504	C-27
IC505	G-26
IC601	G-3
IC602	G-2
IC603	H-1
IC604	C-4
IC607	E-26
Q161	E-12
Q162	E-12
Q166	E-17
Q191	A-20
Q192	A-20
Q193	A-21
Q201	G-17
Q202	H-18
Q203	D-23
Q204	H-17
Q205	I-20
Q206	F-14
Q207	H-21
Q208	F-6
Q209	H-21
Q210	I-8
Q211	J-6
Q212	H-10
Q213	D-23
Q214	E-24
Q215	E-24
Q216	E-6
Q217	E-6
Q218	D-23
Q219	I-20
Q220	G-13
Q221	H-11
Q222	H-25
Q223	I-10
Q224	E-25
Q226	I-24
Q227	I-24
Q228	I-23
Q229	I-9
Q230	H-13
Q231	I-12
Q232	I-12
Q233	F-20
Q234	G-20
Q235	H-12
Q236	H-12
Q237	F-18
Q238	G-12
Q239	G-18
Q240	J-21
Q241	F-18
Q242	J-8
Q244	J-11
Q245	H-11
Q246	H-20
Q247	H-20
Q248	H-20
Q249	G-21
Q256	J-25
Q501	B-23
Q541	E-27
Q542	E-5
Q543	E-5
Q571	D-5
Q572	D-25
Q573	C-26
Q601	J-28
Q602	J-28
Q603	J-29
Q604	J-29
Q606	I-26
Q607	J-28
Q608	J-28
Q609	I-27
Q610	J-29
Q611	H-29
Q612	I-29
Q613	I-29
Q614	E-2
Q615	C-2
Q616	E-29
Q617	D-28
Q618	E-28
Q619	C-1
Q620	I-2
Q621	J-2
Q623	I-6
Q643	F-29
Q644	E-29
Q645	F-28
Q661	D-4
D662	E-4
D663	D-3
D664	D-28
D665	E-28
D681	C-2
D682	C-29

VS-63 BOARD (COMPONENT SIDE)


A
B
C
D
E
F
G
H
I
J
1
2
3
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6
7
8
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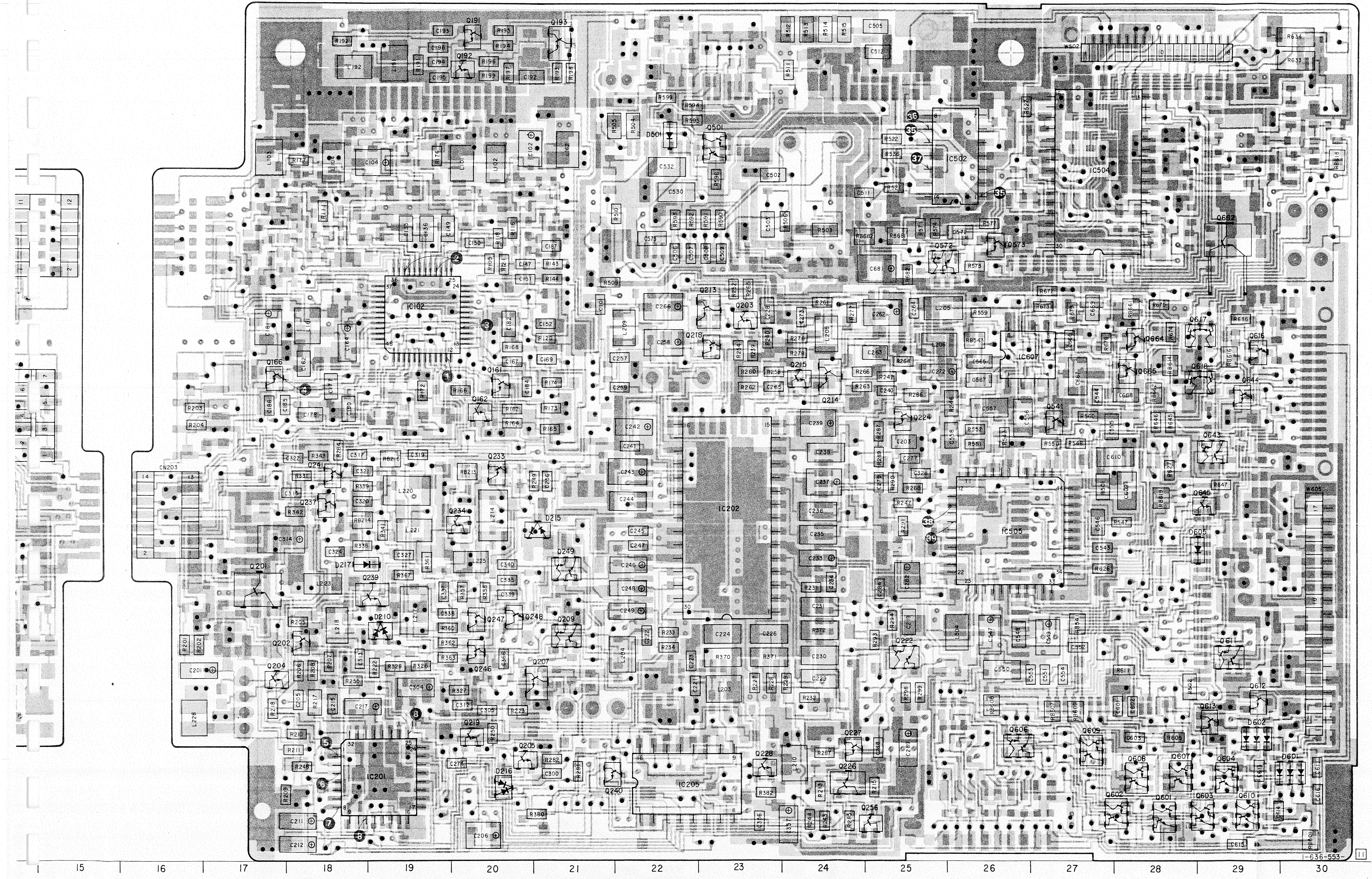
10
11
12
13
14
15
16
IC601
IC203
IC501
IC101
IC604
IC602
IC603
CN501
CN601
CN607
CN101
CN603
CN204
CN202
CN201
CN205
X501
X601
X201
FL201
FL202
FL203
1-636-553-11

VS-63 BOARD (CONDUCTOR SIDE)


IC102
IC201
IC202
IC205
IC502
IC504
IC505
IC607
CN203
W502
W603
1-636-553-11
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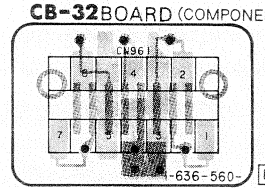
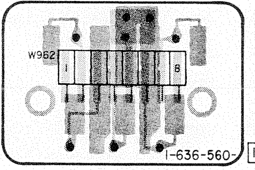
CB-32 BOARD (COMPONENT SIDE)

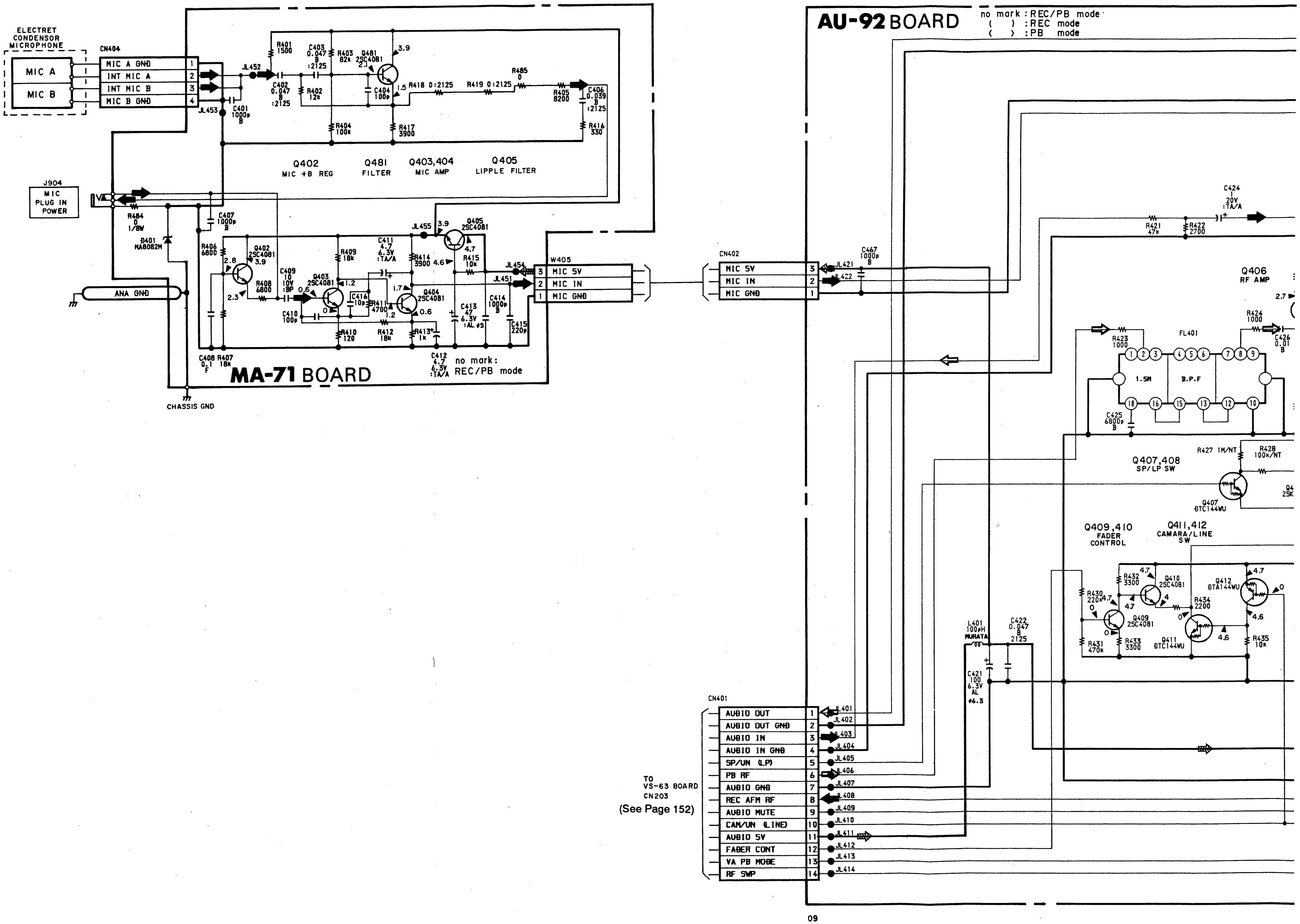

CN961
1-636-560-11

CB-32 BOARD (COMPONENT SIDE)

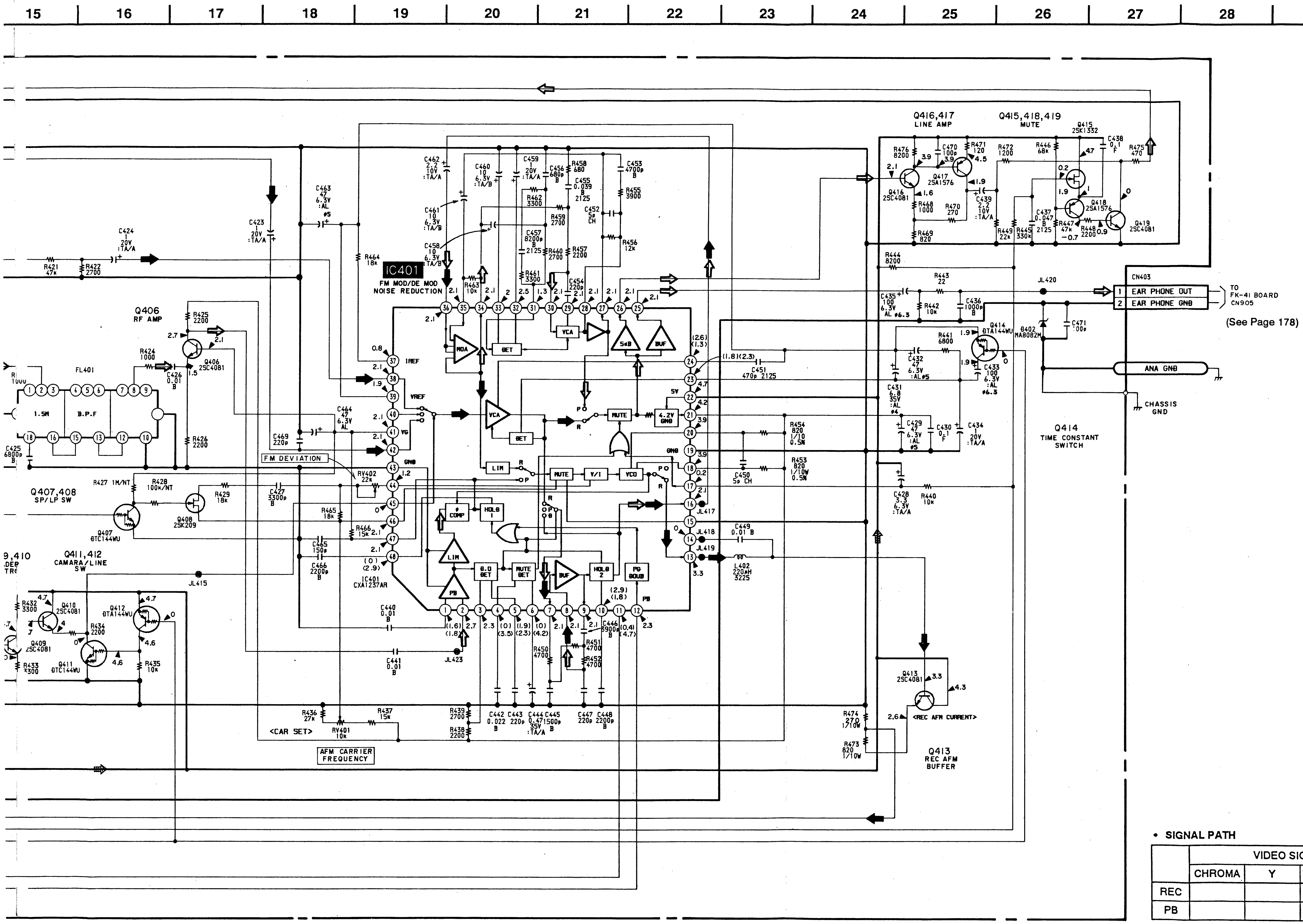

W962
1-636-560-11

AU-92 (AUDIO), MA-71 (MIC AMP) SCHEMATIC DIAGRAMS

— Ref. No. AU-92 BOARD: 6000, MA-71 BOARD: 3000 series —



ELECTRET CONDENSOR MICROPHONE
MIC A
MIC B
CN404
MIC A GND
INT MIC A
INT MIC B
MIC B GND
JL452
JL453
R401 1500
C403 0.047 B :2125
R403 82k
Q481 2SC4081
C402 0.047 B :2125
R402 12k
C401 1000p B
C404 100p
R418 0:2125
R419 0:2125
R485 0
R405 8200
C406 0.039 B :2125
R404 100k
R417 3900
R416 330
Q402 MIC +B REG
Q481 FILTER
Q403,404 MIC AMP
Q405 LIPPLE FILTER
J904 MIC PLUG IN POWER
R484 0 1/8W
D401 MA8082M
C407 1000p B
R406 6800
Q402 2SC4081
R409 18k
C411 4.7 6.3V :TA/A
JL455
Q405 2SC4081
R414 3900
R415 10k
JL454
JL451
W405
MIC 5V
MIC IN
MIC GND
C409 10 10V :BP
Q403 2SC4081
R408 6800
C416 10p
R411 4700
Q404 2SC4081
C413 47 6.3V :AL #5
C414 1000p B
C415 220p
C410 100p
R410 120
R412 18k
R413 1k
ANA GND
C408 0.1 F
R407 18k
C412 4.7 6.3V :TA/A
no mark: REC/PB mode
MA-71 BOARD
CHASSIS GND
AU-92 BOARD
no mark : REC/PB mode
( ) : REC mode
⟨ ⟩ : PB mode
CN402
JL421
JL422
C467 1000p B
C424 1 20V :TA/A
R421 47k
R422 2700
Q406 RF AMP
R424 1000
C426 0.01 B
R423 1000
FL401
1.5M
B.P.F
C425 6800p B
R427 1M/NT
R428 100k/NT
Q407,408 SP/LP SW
Q407 DTC144WU
Q409,410 FADER CONTROL
Q411,412 CAMARA/LINE SW
R432 3300
Q410 2SC4081
Q412 DTA144WU
R430 220k
R434 2200
Q409 2SC4081
R431 470k
R433 3300
Q411 DTC144WU
R435 10k
L401 100μH MURATA
C422 0.047 B 2125
C421 100 6.3V AL #6.3
CN401
AUDIO OUT
AUDIO OUT GND
AUDIO IN
AUDIO IN GND
SP/UN ⟨LP⟩
PB RF
AUDIO GND
REC AFM RF
AUDIO MUTE
CAM/UN ⟨LINE⟩
AUDIO 5V
FADER CONT
VA PB MODE
RF SWP
JL401
JL402
JL403
JL404
JL405
JL406
JL407
JL408
JL409
JL410
JL411
JL412
JL413
JL414
TO VS-63 BOARD CN203
(See Page 152)
09


15
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27
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IC401
FM MOD/DE MOD
NOISE REDUCTION
IC401
CXA1237AR
Q406
RF AMP
Q406 2SC4081
FL401
1.5M
B.P.F
Q407,408
SP/LP SW
Q407 DTC144WU
Q408 2SK209
Q411,412
CAMARA/LINE SW
Q409 2SC4081
Q410 2SC4081
Q411 DTC144WU
Q412 DTA144WU
JL415
FM DEVIATION
RV402 22k
<CAR SET>
RV401 10k
AFM CARRIER FREQUENCY
IREF
VREF
VG
GND
MOA
DET
VCA
S&H
BUF
MUTE
4.2V GND
LIM
Y/I
VCO
COMP
HOLD 1
HOLD 2
S.D DET
MUTE DET
PB
PG BOUS
JL417
JL418
JL419
JL423
L402 220μH 3225
Q416,417
LINE AMP
Q415,418,419
MUTE
Q415 2SK1332
Q416 2SC4081
Q417 2SA1576
Q418 2SA1576
Q419 2SC4081
JL420
CN403
1 EAR PHONE OUT
2 EAR PHONE GND
TO FK-41 BOARD CN905
(See Page 178)
Q414 DTA144WU
D402 MA8082M
ANA GND
CHASSIS GND
Q414
TIME CONSTANT SWITCH
Q413 2SC4081
<REC AFM CURRENT>
Q413
REC AFM BUFFER

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC				➡
PB				⇨

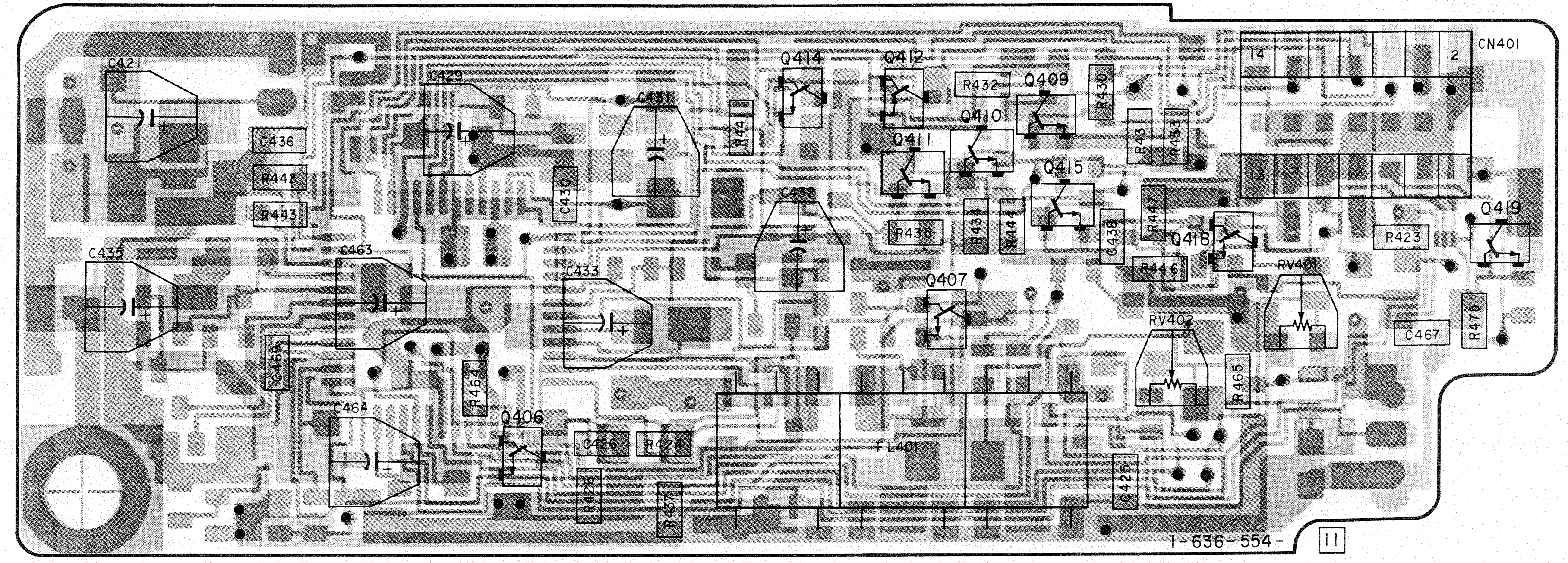
AUDIO AUDIO

AU-92 (AUDIO), MA-71 (MIC AMP) PRINTED WIRING BOARDS

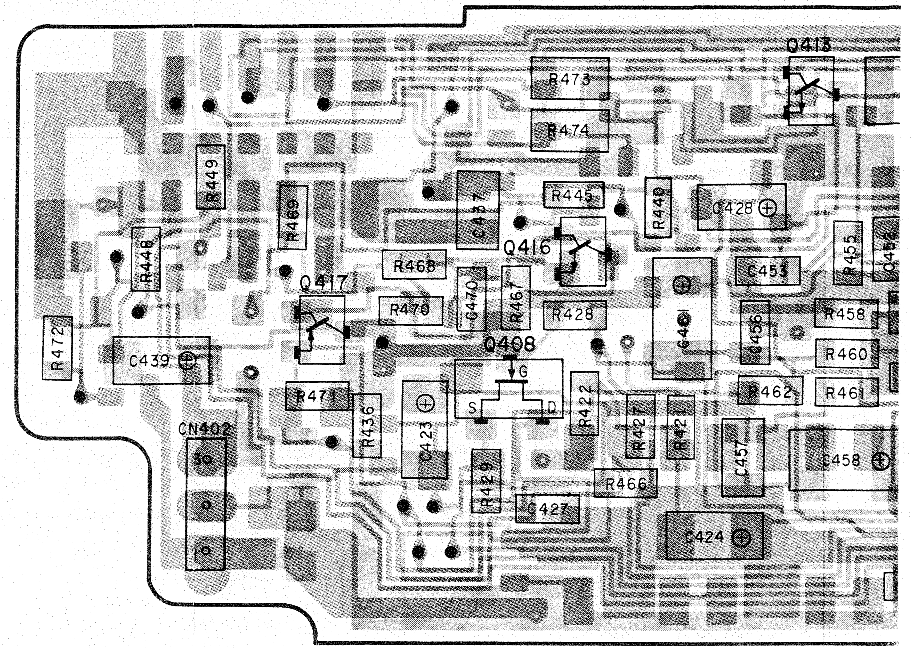
— Ref. No. AU-92 BOARD: 6000, MA-71 BOARD: 3000 series —

- **For printed wiring boards.**
- AU-92, MA-71 boards are the printed wiring board which has four layers structure but inner two layers' patterns are omitted.

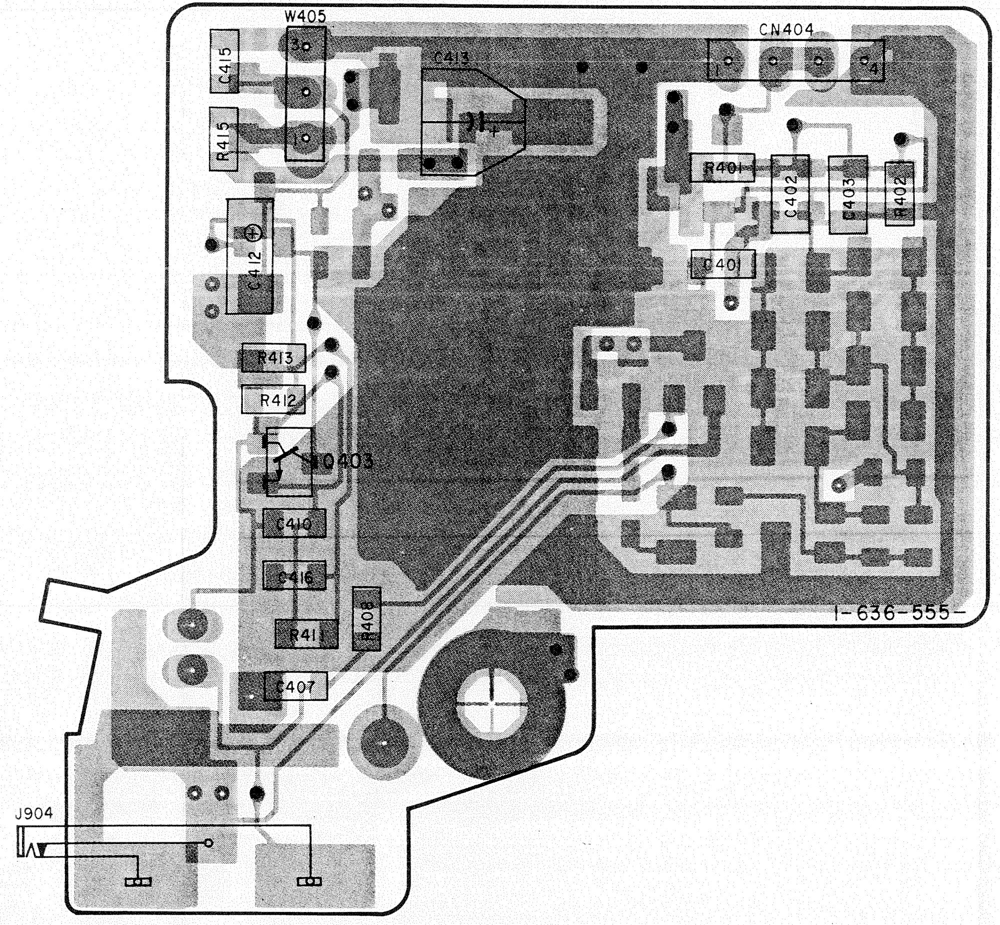
AU-92 BOARD (COMPONENT SIDE)


C421
C429
C431
Q414
Q412
R432
Q409
R430
CN401
14
2
C436
R442
R443
C430
R441
Q410
Q411
R43
R433
Q415
13
C432
R435
R434
R444
C438
R447
Q418
Q419
R423
C435
C463
C433
R446
Q407
RV401
RV402
C467
R476
C469
R464
C464
Q406
C426
R424
FL401
R465
R426
R437
C425
1-636-554-
11

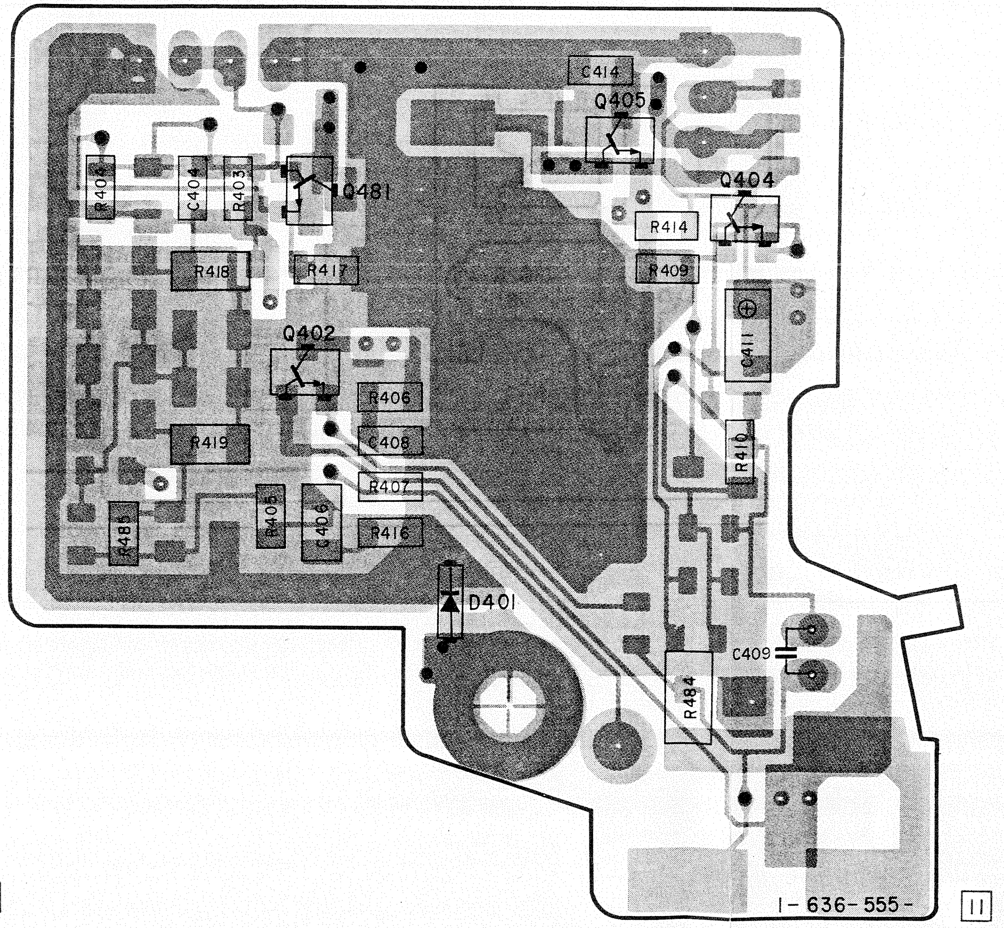
AU-92 BOARD (CONDUCTOR SIDE)


Q413
R473
R474
R449
R469
C437
R445
R440
C428
R448
Q416
Q417
R468
R470
C470
R467
R428
C453
R455
R472
C439
C461
C456
R458
R460
Q408
R471
R436
C423
R422
R427
R421
R462
R461
CN402
R429
R466
C457
C458
C427
C424

MA-71 BOARD (COMPONENT SIDE)

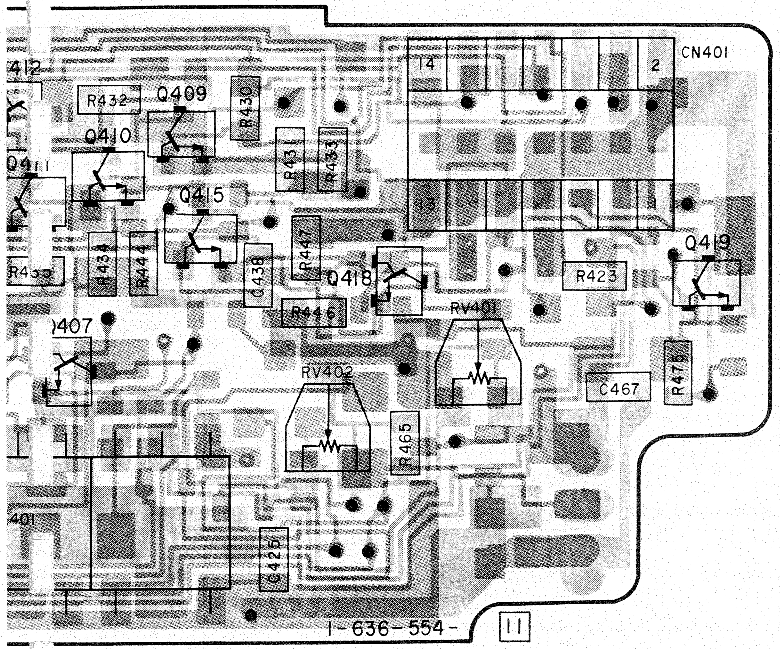

W405
C415
C413
CN404
R415
R401
C402
C403
R402
C412
C401
R413
R412
Q403
C410
C416
R411
R408
C407
J904
1-636-555-

MA-71 BOARD (CONDUCTOR SIDE)


C414
Q405
R408
C404
R403
Q481
Q404
R414
R418
R417
R409
C411
Q402
R406
R419
C408
R410
R407
R485
R405
C406
R416
D401
C409
R484
1-636-555-
11

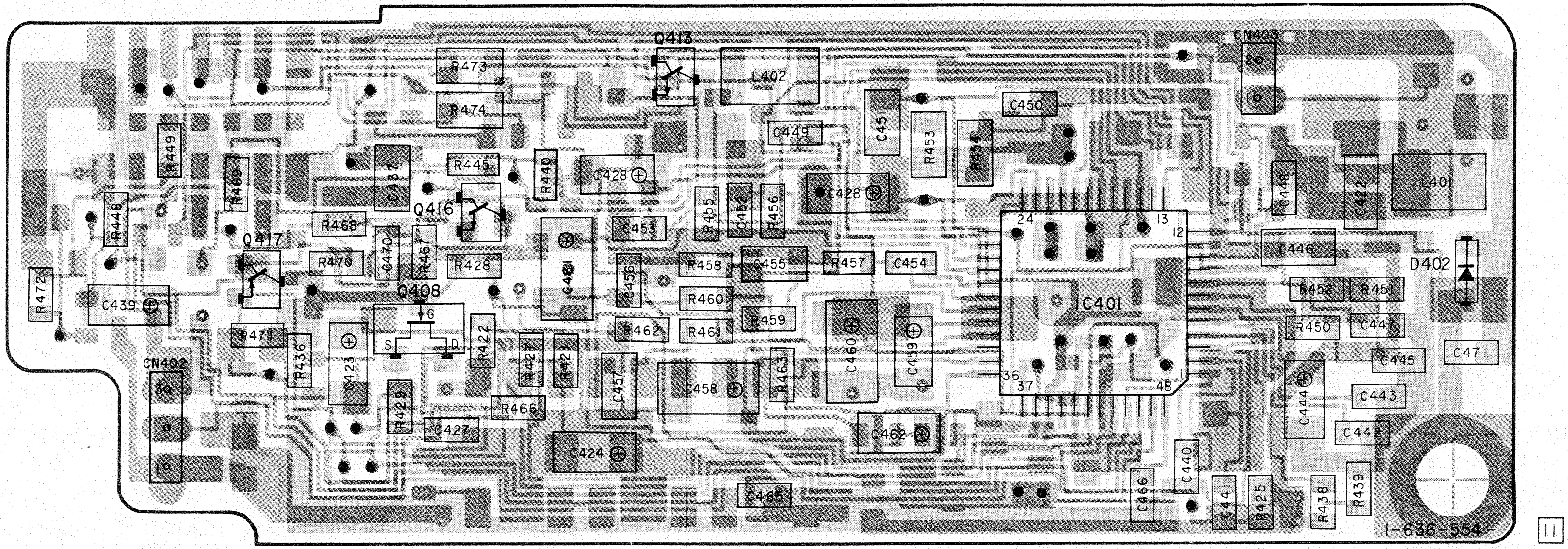
11

iri board which has
patterns are omitted.

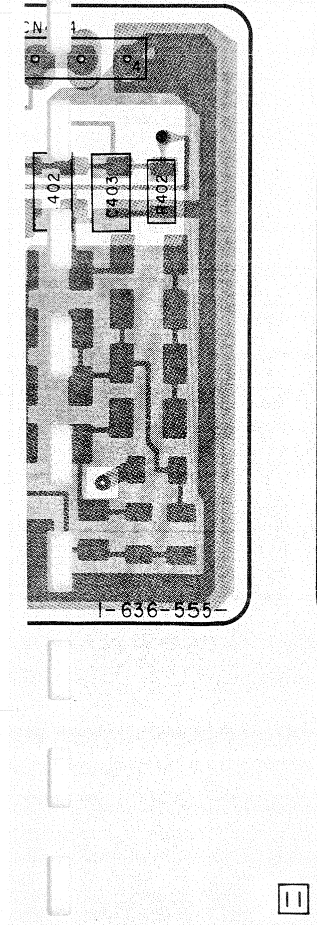


R432
Q409
Q410
Q415
R430
R431
R433
R434
R444
R438
R447
Q418
R446
RV401
RV402
R423
Q419
CN401
14
2
13
R465
R467
R476
R426
C467
1-636-554-
11

AU-92 BOARD(CONDUCTOR SIDE)

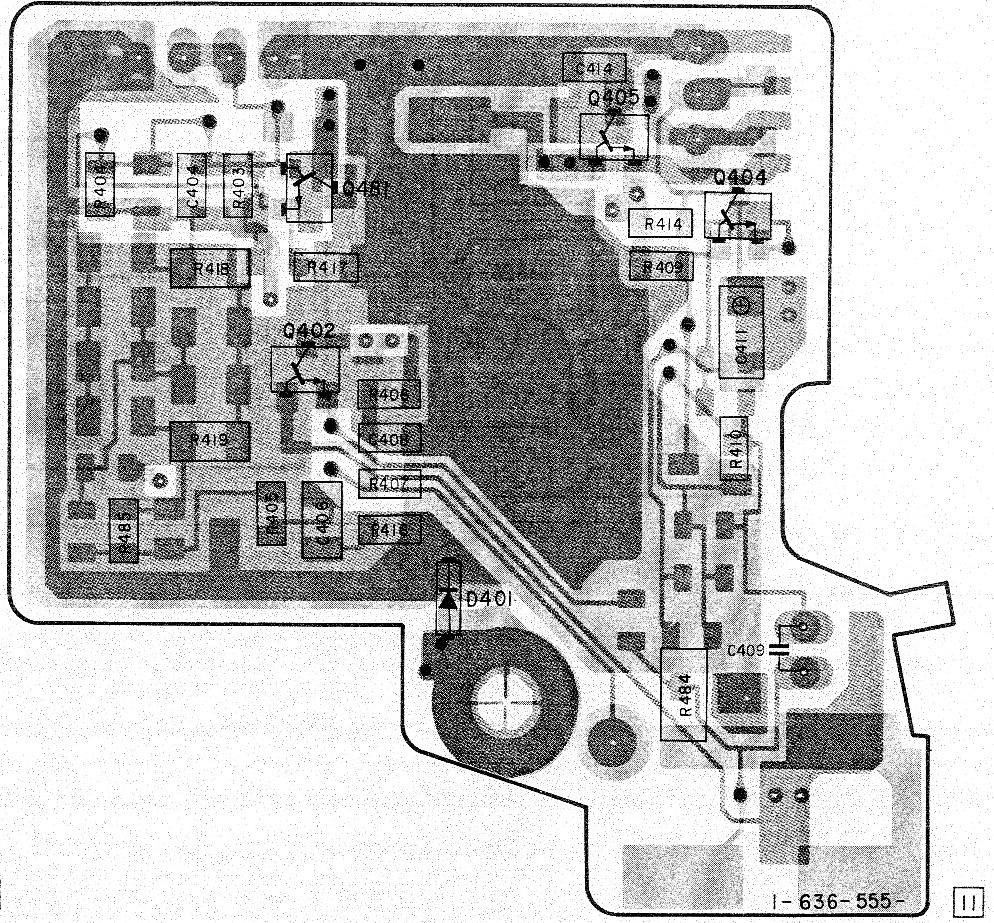


Q413
CN403
L402
R473
R474
C450
C449
C451
R453
R454
R449
R469
C437
R445
R440
C428
L401
R448
Q416
R455
C452
R456
C428
C422
C448
Q417
R468
C453
24
13
12
C446
D402
R472
R470
C470
R467
R428
C461
C456
R458
C455
R457
C454
R452
R451
C439
Q408
R460
IC401
R471
R436
C423
S
G
D
R422
R427
R442
R462
R461
R459
C460
C459
R450
C447
C471
CN402
36
37
48
C445
C457
R463
C458
C444
C443
R429
C427
R466
C424
C462
C442
C466
C440
C441
R425
R438
R439
C465
1-636-554-
11



402
R403
R402
1-636-555-
11

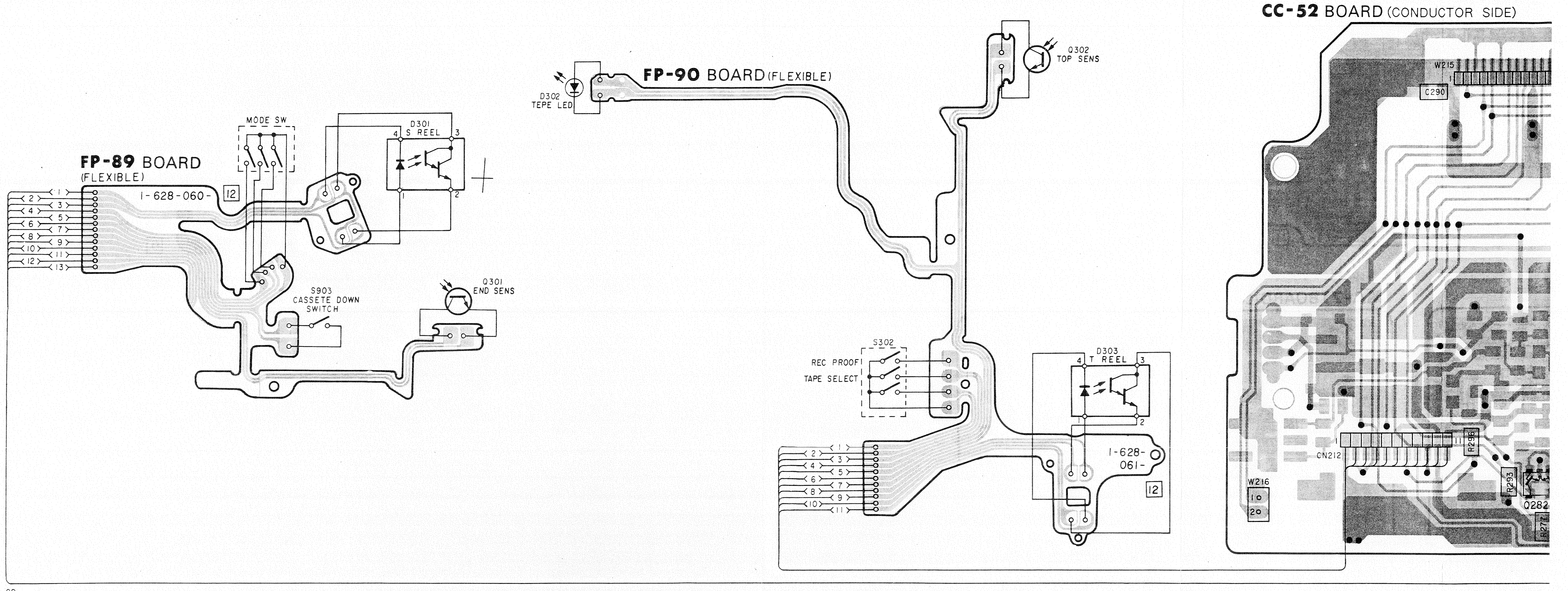
MA-71 BOARD (CONDUCTOR SIDE)



C414
Q405
Q404
R404
C404
R403
Q481
R414
R409
R418
R417
C411
Q402
R406
C408
R419
R410
R407
R485
R405
C406
R416
D401
C409
R484
1-636-555-
11

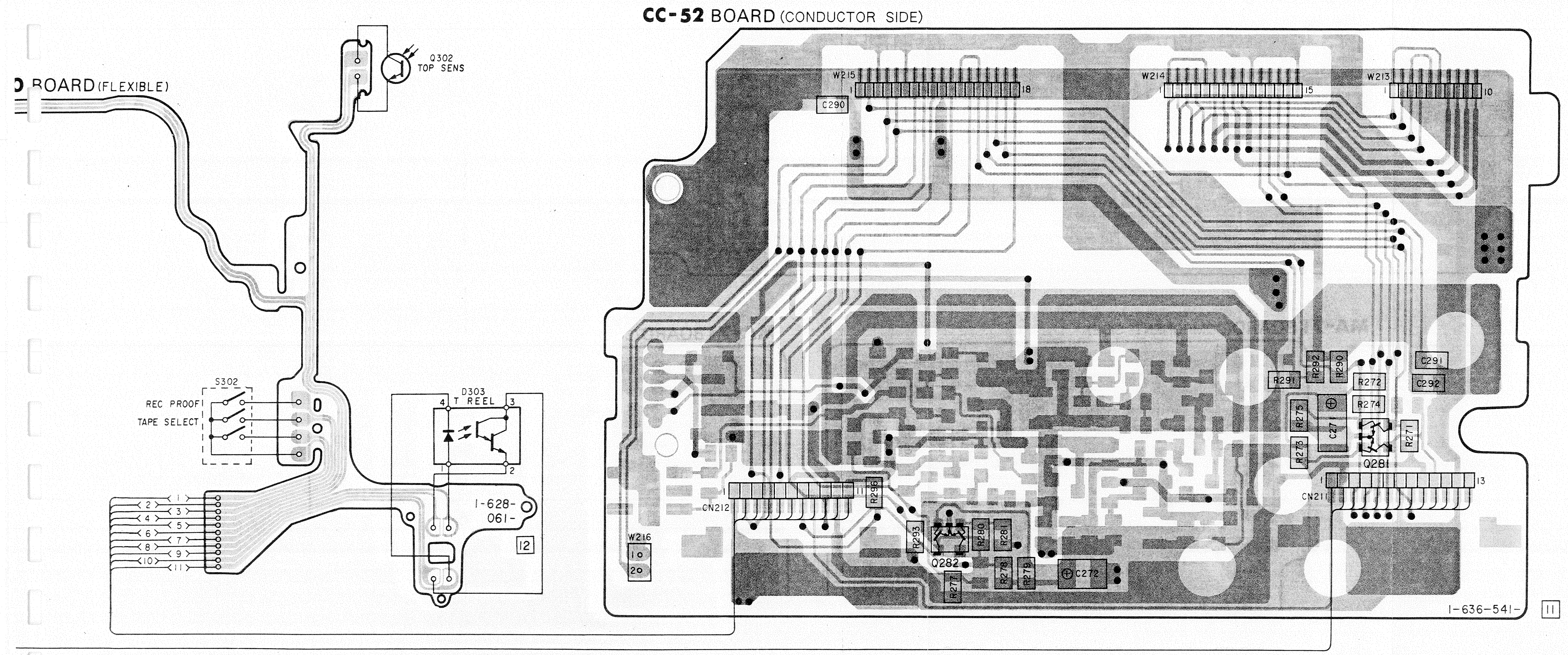
CC-52 (MECHANISM BLOCK RELAY) PRINTED WIRING BOARD

— Ref. No. CC-52 BOARD: 6000 series —


CC-52 BOARD (CONDUCTOR SIDE)
W215
C290
FP-90 BOARD (FLEXIBLE)
D302
TEPE LED
Q302
TOP SENS
FP-89 BOARD
(FLEXIBLE)
MODE SW
D301
S REEL
1
2
3
4
1-628-060-
12
S903
CASSETE DOWN
SWITCH
Q301
END SENS
1
2
3
4
5
6
7
8
9
10
11
12
13
S302
REC PROOF
TAPE SELECT
D303
T REEL
1-628-
061-
12
CN212
R296
R293
Q282
R277
W216

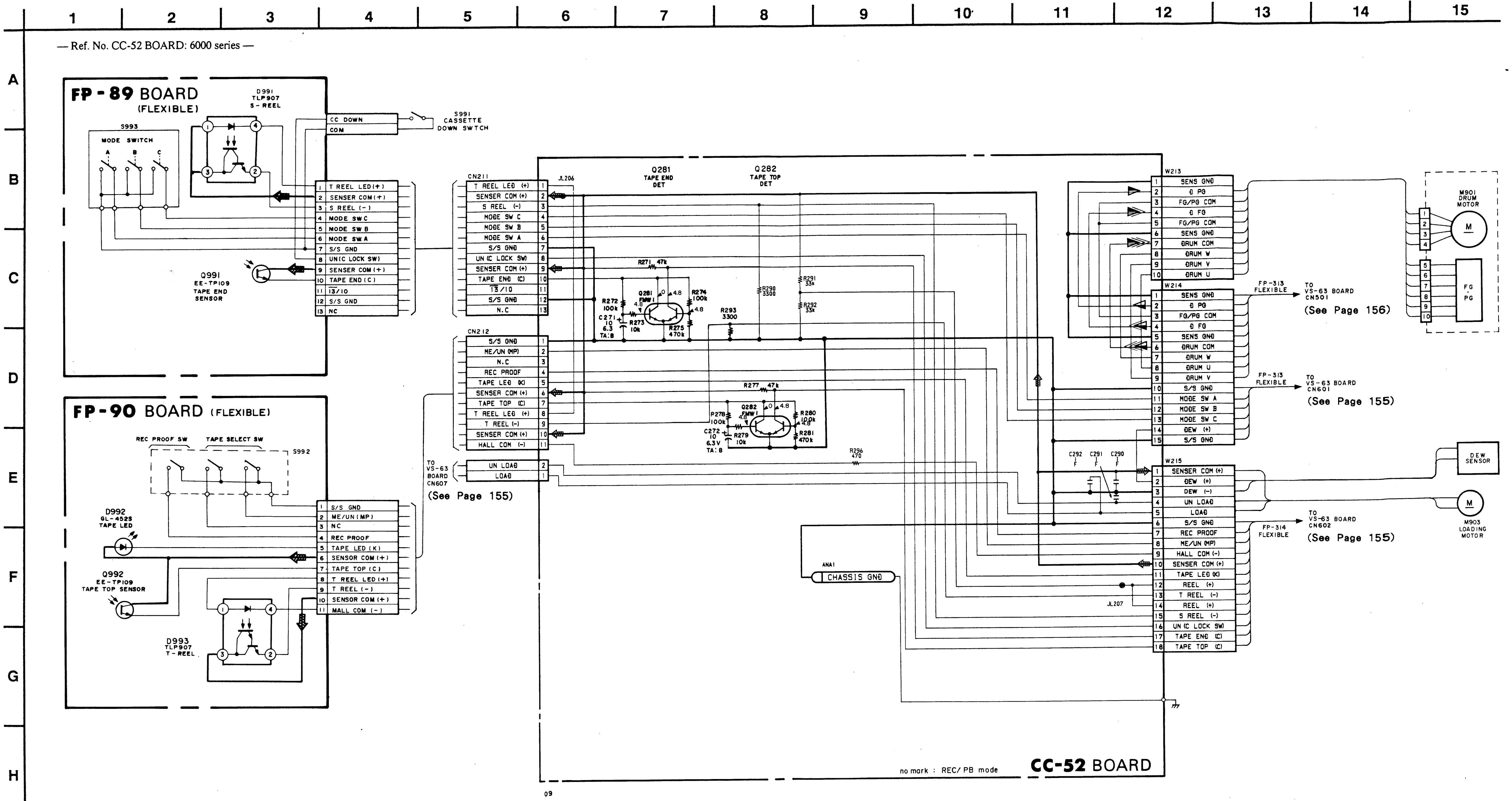
CC-52 (MECHANISM BLOCK RELAY) PRINTED WIRING BOARD

— Ref. No. CC-52 BOARD: 6000 series —


CC-52 BOARD (CONDUCTOR SIDE)
BOARD (FLEXIBLE)
Q302
TOP SENS
S302
REC PROOF
TAPE SELECT
D303
T REEL
4
3
1
2
1-628-061-
12
1
2
3
4
5
6
7
8
9
10
11
W215
1
18
W214
1
15
W213
1
10
C290
R291
R292
R290
C291
C292
R272
R274
R275
C271
R273
R271
Q281
CN211
1
13
CN212
1
R296
R293
R280
R281
Q282
R277
R278
R279
C272
W216
1
2
1-636-541-
11

CC-52 (MECHANISM BLOCK RELAY) SCHEMATIC DIAGRAM

— Ref. No. CC-52 BOARD: 6000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
FP-89 BOARD (FLEXIBLE)
D991 TLP907 S-REEL
S993 MODE SWITCH
A B C
CC DOWN
COM
S991 CASSETTE DOWN SWTCH
Q991 EE-TP109 TAPE END SENSOR
T REEL LED (+)
SENSER COM (+)
S REEL (-)
MODE SW C
MODE SW B
MODE SW A
S/S GND
UN (C LOCK SW)
SENSER COM (+)
TAPE END (C)
13/10
S/S GND
NC
FP-90 BOARD (FLEXIBLE)
REC PROOF SW
TAPE SELECT SW
S992
D992 GL-452S TAPE LED
Q992 EE-TP109 TAPE TOP SENSOR
D993 TLP907 T-REEL
ME/UN (MP)
REC PROOF
TAPE LED (K)
TAPE TOP (C)
T REEL LED (+)
T REEL (-)
HALL COM (-)
CN211
CN212
JL206
Q281 TAPE END DET
Q282 TAPE TOP DET
R271 47k
R272 100k
C271 10 6.3 TA:B
R273 10k
R274 100k
R275 470k
R290 3300
R291 33k
R292 33k
R293 3300
R277 47k
R278 100k
C272 10 6.3V TA:B
R279 10k
R280 100k
R281 470k
R296 470
FMW1
4.8
TO VS-63 BOARD CN607 (See Page 155)
UN LOAD
LOAD
ANA1
CHASSIS GND
JL207
C292 C291 C290
F
W213
W214
W215
SENS GND
θ PG
FG/PG COM
θ FG
DRUM COM
DRUM W
DRUM V
DRUM U
MODE SW A
MODE SW B
MODE SW C
DEW (+)
DEW (-)
SENSER COM (+)
REEL (+)
T REEL (-)
S REEL (-)
UN (C LOCK SW)
TAPE END (C)
TAPE TOP (C)
FP-313 FLEXIBLE
TO VS-63 BOARD CN501 (See Page 156)
TO VS-63 BOARD CN601 (See Page 155)
FP-314 FLEXIBLE
TO VS-63 BOARD CN602 (See Page 155)
M901 DRUM MOTOR
M
FG PG
DEW SENSOR
M903 LOADING MOTOR
no mark : REC/PB mode
CC-52 BOARD
09

- SIGNAL PATH

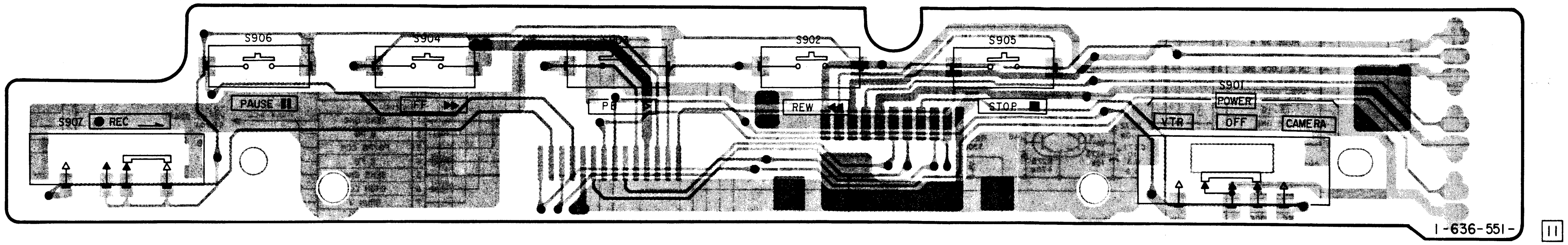
	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		⊳⊳	
Drum servo (speed and phase)		⊳⊳⊳	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal			

FK-41 (VTR FUNCTION), SW-158 (CAMERA FUNCTION), EJ-20 (EJECT SWITCH) PRINTED WIRING BOARDS

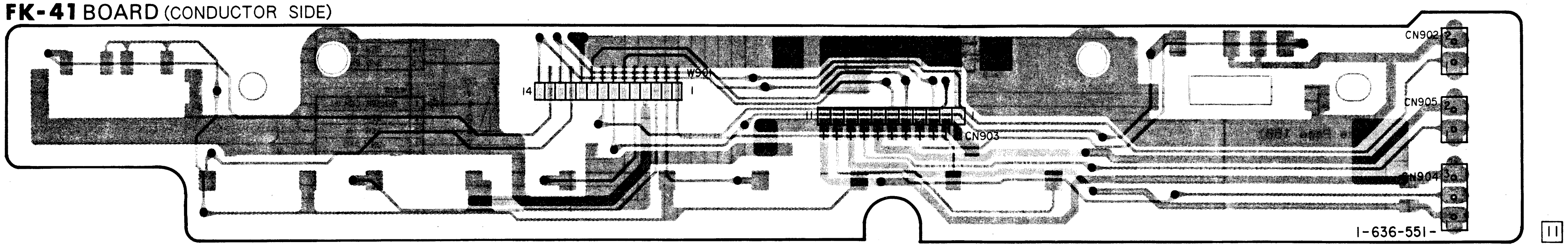
— Ref. No. FK-41 BOARD: 10000, SW-158 BOARD: 11000, EJ-20 BOARD: 12000 series —

- **For printed wiring boards.**
- ZOOM SWITCH UNIT is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.

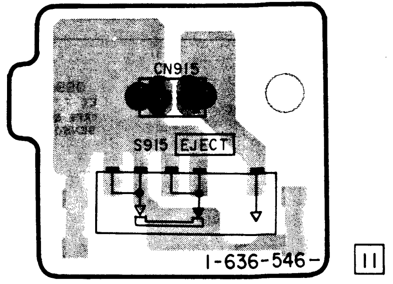
FK-41 BOARD (COMPONENT SIDE)


S906
S904
S902
S905
S907 ● REC
PAUSE ▮▮
FF ▶▶
PB
REW
STOP ■
S901
POWER
VTR
OFF
CAMERA
1-636-551-
11

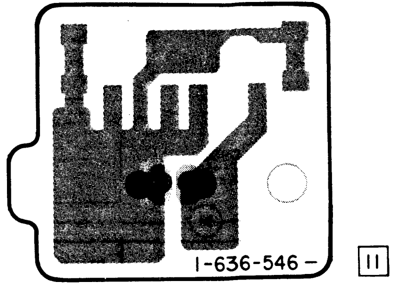
FK-41 BOARD (CONDUCTOR SIDE)


CN902
W901
14
1
11
CN903
CN905
CN904
1-636-551-
11

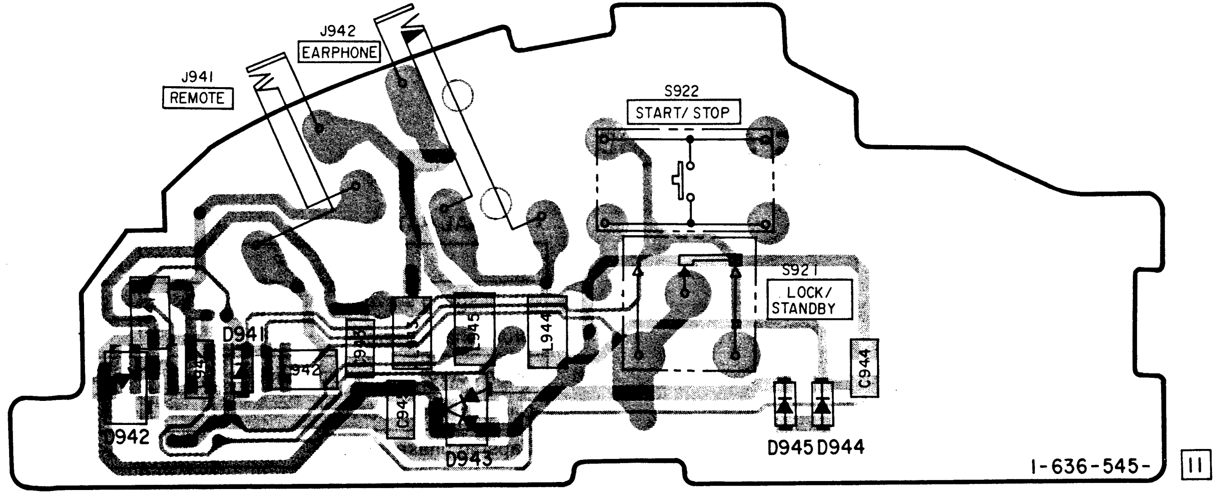
EJ-20 BOARD (COMPONENT SIDE)


CN915
S915 EJECT
1-636-546-
11

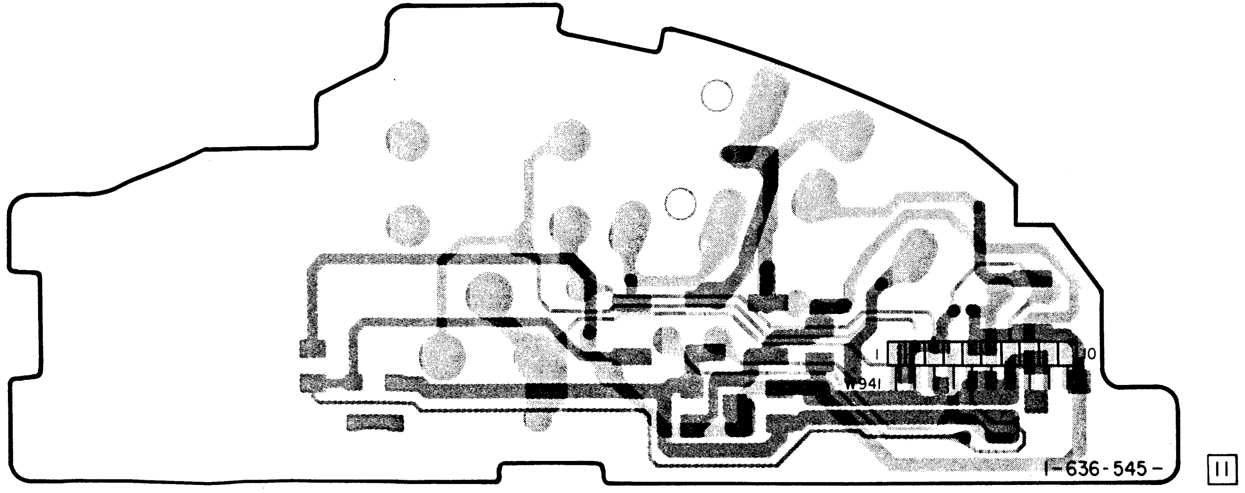
EJ-20 BOARD (CONDUCTOR SIDE)



SW-158 BOARD (COMPONENT SIDE)

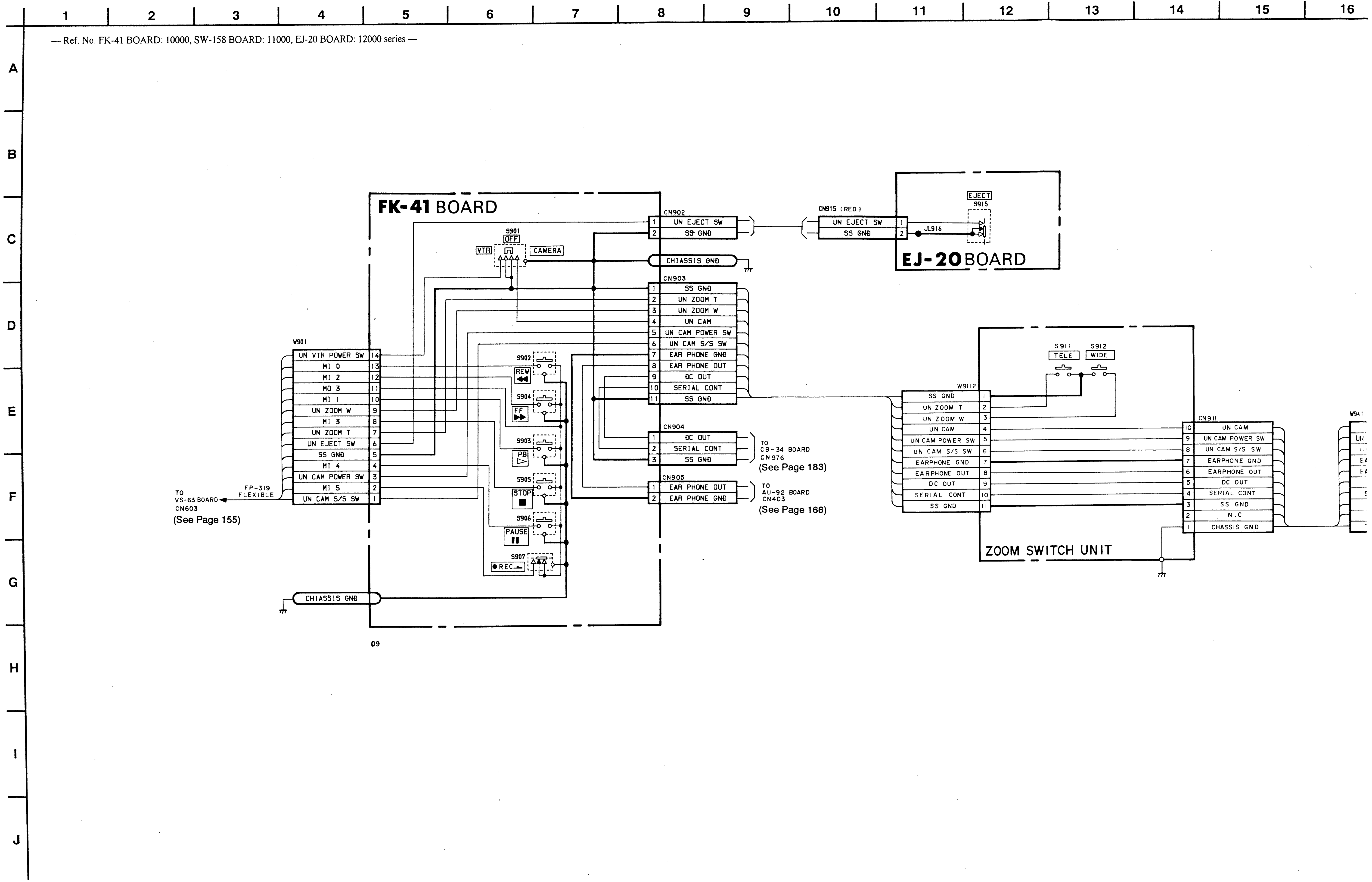

J942
EARPHONE
J941
REMOTE
S922
START/ STOP
S921
LOCK/ STANDBY
D941
D942
D943
D945 D944
C944
1-636-545-
11

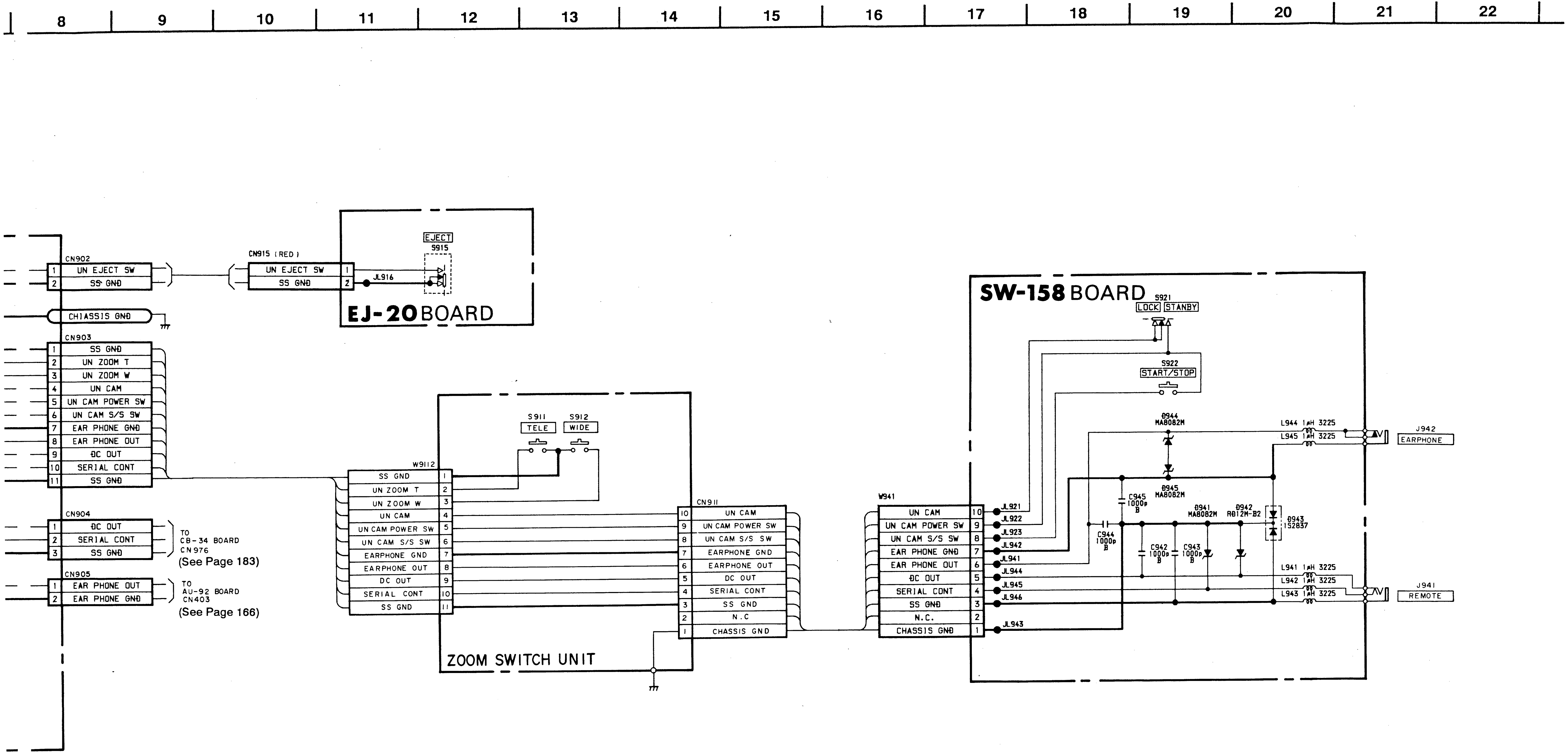
SW-158 BOARD (CONDUCTOR SIDE)


W941
1-636-545-
11

FK-41 (VTR FUNCTION), SW-158 (CAMERA FUNCTION), EJ-20 (EJECT SWITCH) ZOOM SWITCH UNIT SCHEMATIC DIAGRAMS

— Ref. No. FK-41 BOARD: 10000, SW-158 BOARD: 11000, EJ-20 BOARD: 12000 series —

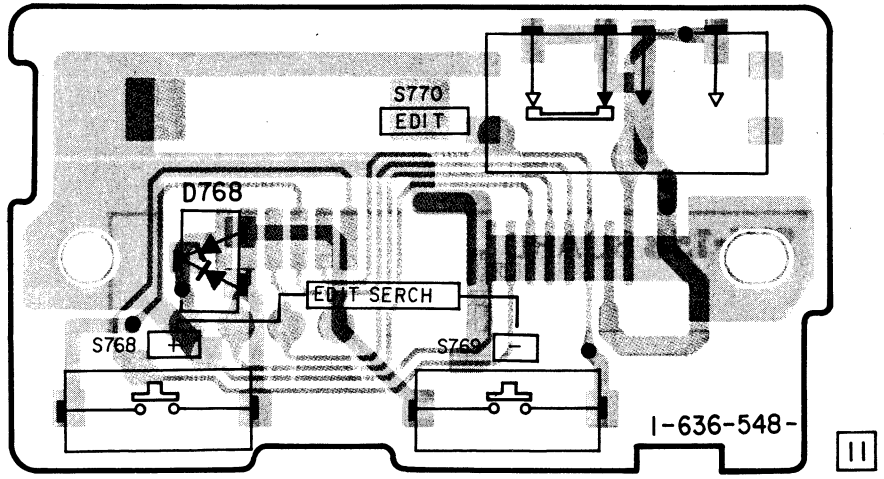

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
FK-41 BOARD
S901
OFF
VTR
CAMERA
W901
UN VTR POWER SW 14
MI 0 13
MI 2 12
MO 3 11
MI 1 10
UN ZOOM W 9
MI 3 8
UN ZOOM T 7
UN EJECT SW 6
SS GND 5
MI 4 4
UN CAM POWER SW 3
MI 5 2
UN CAM S/S SW 1
TO VS-63 BOARD CN603
(See Page 155)
FP-319 FLEXIBLE
S902
REW
S904
FF
S903
PB
S905
STOP
S906
PAUSE
S907
●REC
CHIASSIS GND
09
CN902
1 UN EJECT SW
2 SS GND
CHIASSIS GND
CN903
1 SS GND
2 UN ZOOM T
3 UN ZOOM W
4 UN CAM
5 UN CAM POWER SW
6 UN CAM S/S SW
7 EAR PHONE GND
8 EAR PHONE OUT
9 DC OUT
10 SERIAL CONT
11 SS GND
CN904
1 DC OUT
2 SERIAL CONT
3 SS GND
TO CB-34 BOARD CN976
(See Page 183)
CN905
1 EAR PHONE OUT
2 EAR PHONE GND
TO AU-92 BOARD CN403
(See Page 166)
CN915 (RED)
UN EJECT SW 1
SS GND 2
JL916
EJECT
S915
EJ-20 BOARD
S911
TELE
S912
WIDE
W9112
SS GND 1
UN ZOOM T 2
UN ZOOM W 3
UN CAM 4
UN CAM POWER SW 5
UN CAM S/S SW 6
EARPHONE GND 7
EARPHONE OUT 8
DC OUT 9
SERIAL CONT 10
SS GND 11
CN911
10 UN CAM
9 UN CAM POWER SW
8 UN CAM S/S SW
7 EARPHONE GND
6 EARPHONE OUT
5 DC OUT
4 SERIAL CONT
3 SS GND
2 N.C
1 CHASSIS GND
ZOOM SWITCH UNIT
W941
UN


8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
CN902
1 UN EJECT SW
2 SS GND
CHASSIS GND
CN903
1 SS GND
2 UN ZOOM T
3 UN ZOOM W
4 UN CAM
5 UN CAM POWER SW
6 UN CAM S/S SW
7 EAR PHONE GND
8 EAR PHONE OUT
9 DC OUT
10 SERIAL CONT
11 SS GND
CN904
1 DC OUT
2 SERIAL CONT
3 SS GND
TO CB-34 BOARD CN976
(See Page 183)
CN905
1 EAR PHONE OUT
2 EAR PHONE GND
TO AU-92 BOARD CN403
(See Page 166)
CN915 (RED)
UN EJECT SW 1
SS GND 2
JL916
EJECT
S915
EJ-20 BOARD
W9112
SS GND 1
UN ZOOM T 2
UN ZOOM W 3
UN CAM 4
UN CAM POWER SW 5
UN CAM S/S SW 6
EARPHONE GND 7
EARPHONE OUT 8
DC OUT 9
SERIAL CONT 10
SS GND 11
S911
TELE
S912
WIDE
CN911
10 UN CAM
9 UN CAM POWER SW
8 UN CAM S/S SW
7 EARPHONE GND
6 EARPHONE OUT
5 DC OUT
4 SERIAL CONT
3 SS GND
2 N.C
1 CHASSIS GND
ZOOM SWITCH UNIT
W941
UN CAM 10
UN CAM POWER SW 9
UN CAM S/S SW 8
EAR PHONE GND 7
EAR PHONE OUT 6
DC OUT 5
SERIAL CONT 4
SS GND 3
N.C. 2
CHASSIS GND 1
JL921
JL922
JL923
JL942
JL941
JL944
JL945
JL946
JL943
SW-158 BOARD
S921
LOCK
STANBY
S922
START/STOP
D944
MA8082M
D945
MA8082M
C945
1000p
B
C944
1000p
B
C942
1000p
B
C943
1000p
B
D941
MA8082M
D942
RD12M-B2
D943
1S2837
L944 1μH 3225
L945 1μH 3225
J942
EARPHONE
L941 1μH 3225
L942 1μH 3225
L943 1μH 3225
J941
REMOTE

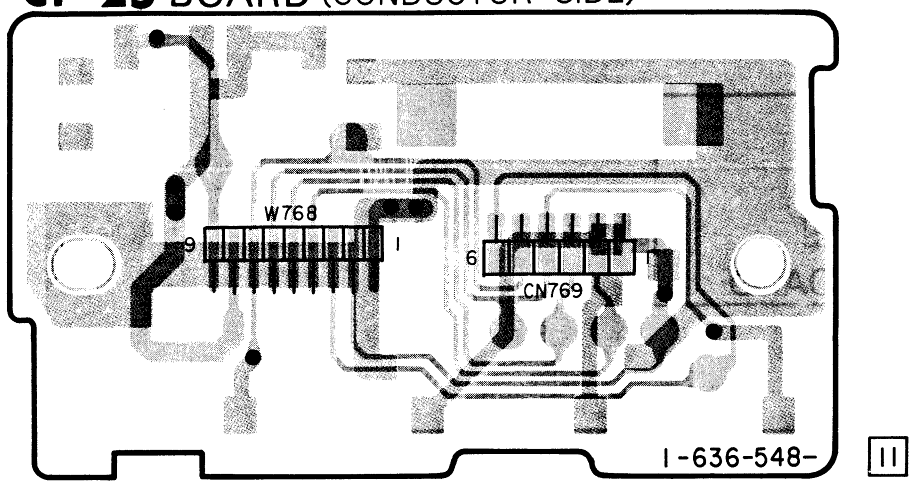
CB-34 (RELAY), CF-22, CF-23, CF-25 (CAMERA FUNCTION) PRINTED WIRING BOARDS

— Ref. No. CB-34, CF-23 BOARDS: 8000, CF-22 BOARD: 6000, CF-25 BOARD: 4000 series —

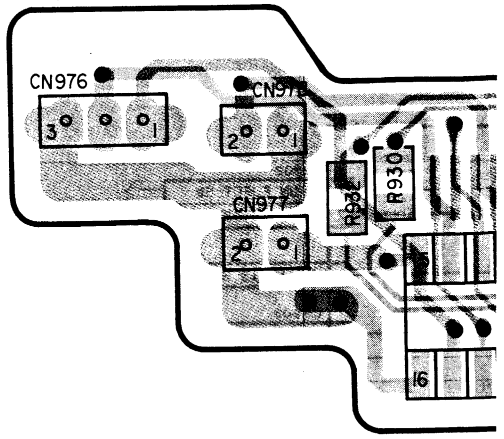
CF-25 BOARD (COMPONENT SIDE)


S770
EDIT
D768
EDIT SERCH
S768
+
S769
–
1-636-548-
11

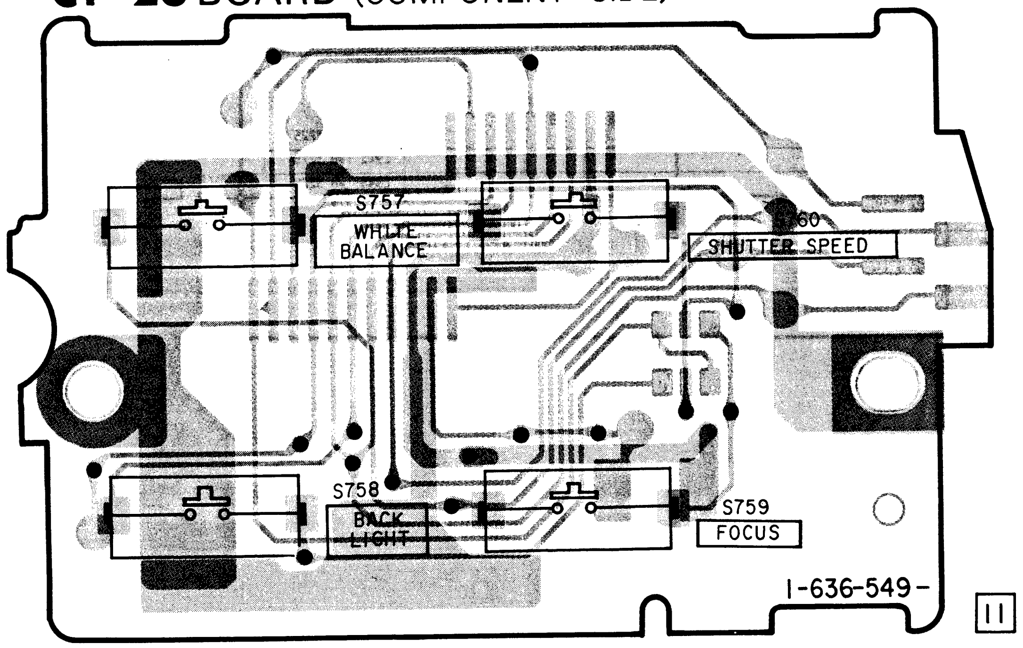
CF-25 BOARD (CONDUCTOR SIDE)


W768
9
1
6
CN769
1-636-548-
11

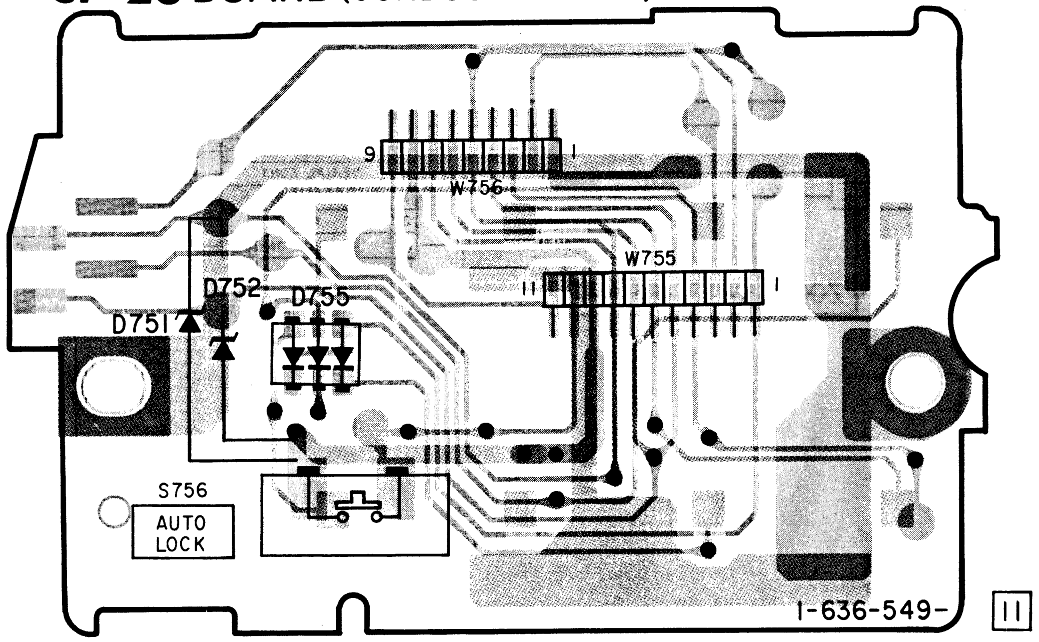
CB-34 BOARD (COMPONEN


CN976
3
2
1
CN97
2
1
CN977
2
R932
R930
16

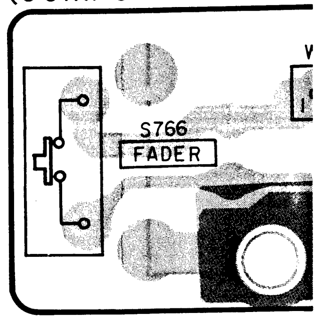
CF-23 BOARD (COMPONENT SIDE)


S757
WHITE
BALANCE
S760
SHUTTER SPEED
S758
BACK
LIGHT
S759
FOCUS
1-636-549-
11

CF-23 BOARD (CONDUCTOR SIDE)

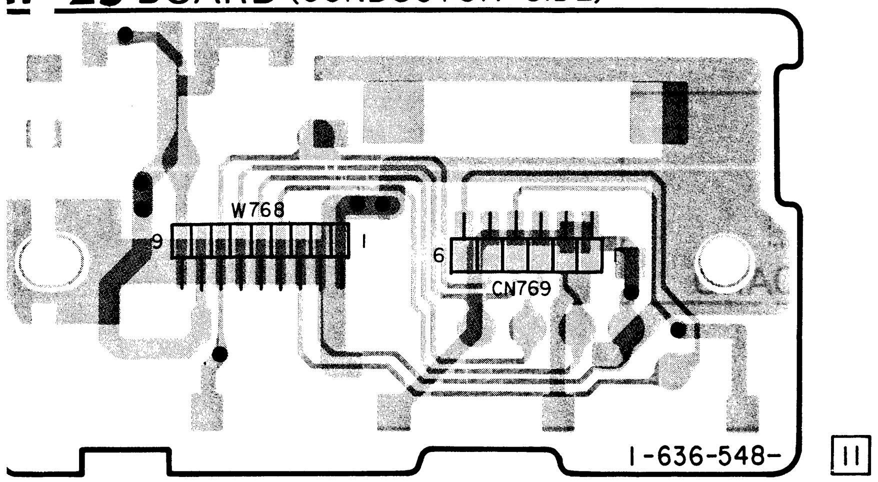

9
1
W756
W755
11
1
D752
D755
D751
S756
AUTO
LOCK
1-636-549-
11

CF-22 BOARD
(COMPONENT SIDE

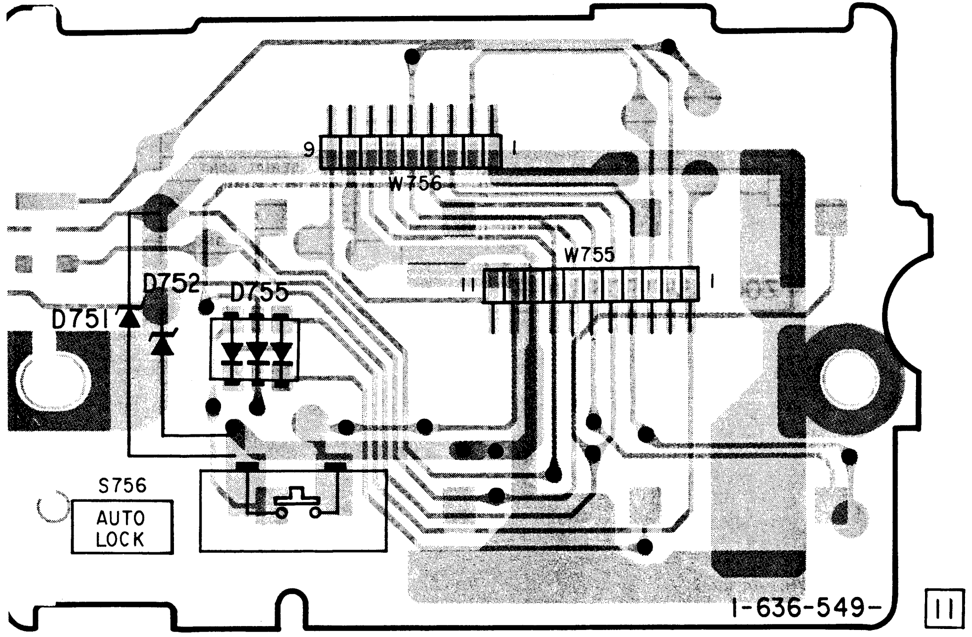


09

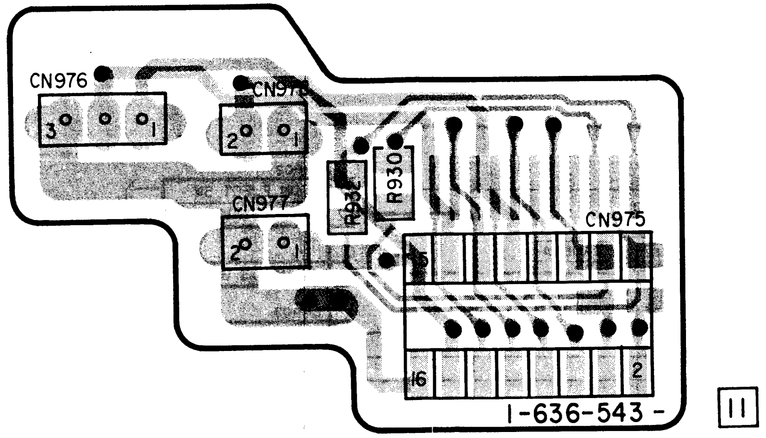
-25 BOARD (CONDUCTOR SIDE)


W768
9
1
6
CN769
1-636-548-
11

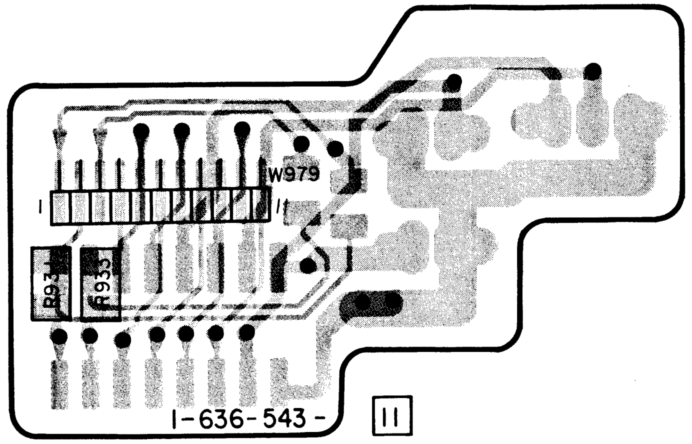
F-23 BOARD (CONDUCTOR SIDE)


9
1
W756
W755
11
1
D752
D751
D755
S756
AUTO
LOCK
1-636-549-
11

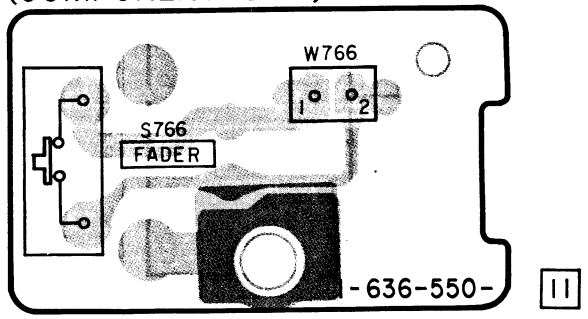
CB-34 BOARD (COMPONENT SIDE)


CN976
3
1
CN978
2
1
CN977
2
1
R931
R930
CN975
15
16
2
1-636-543-
11

CB-34 BOARD (CONDUCTOR SIDE)

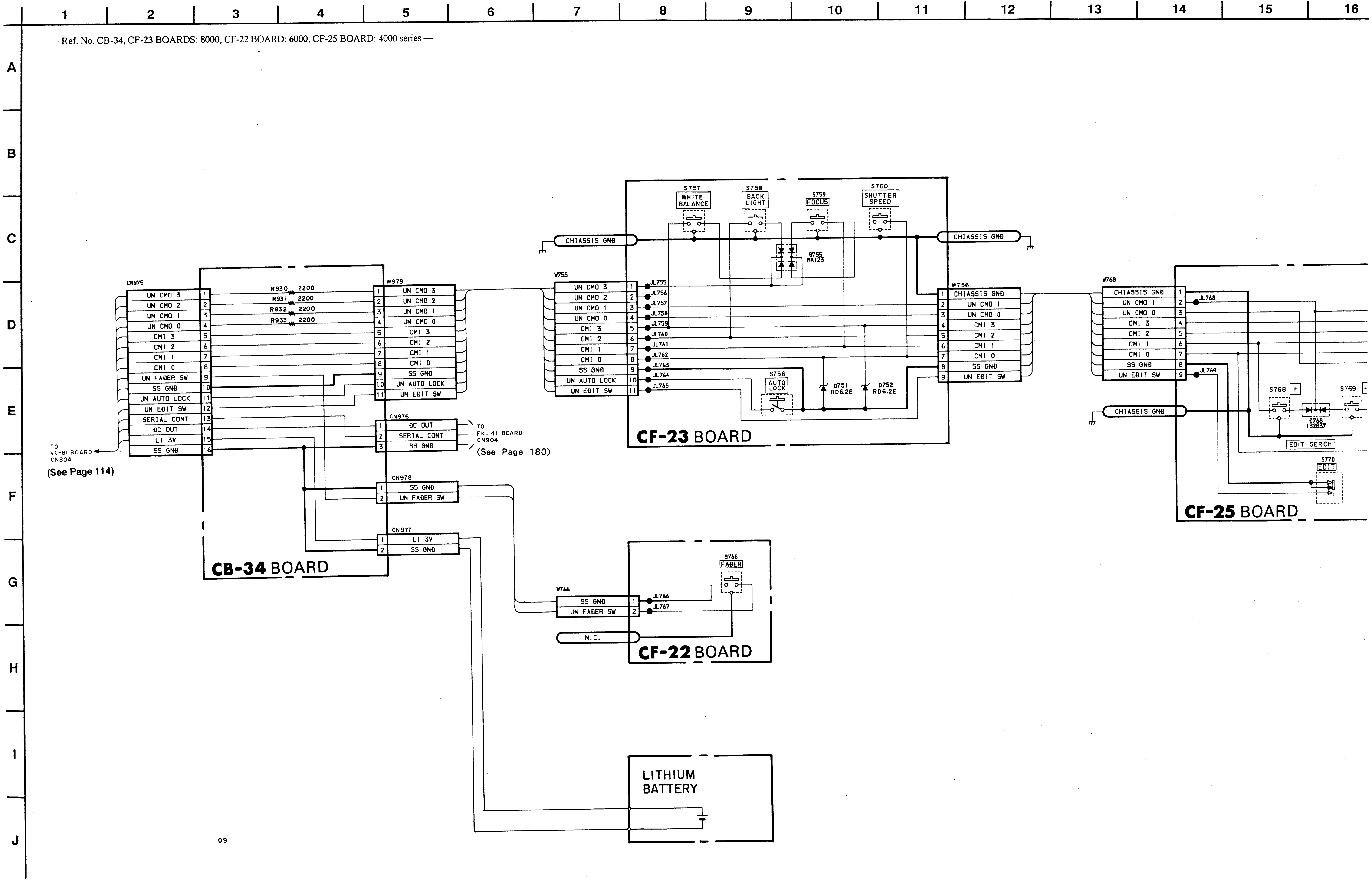

W979
1
11
R931
R933
1-636-543-
11

CF-22 BOARD
(COMPONENT SIDE)

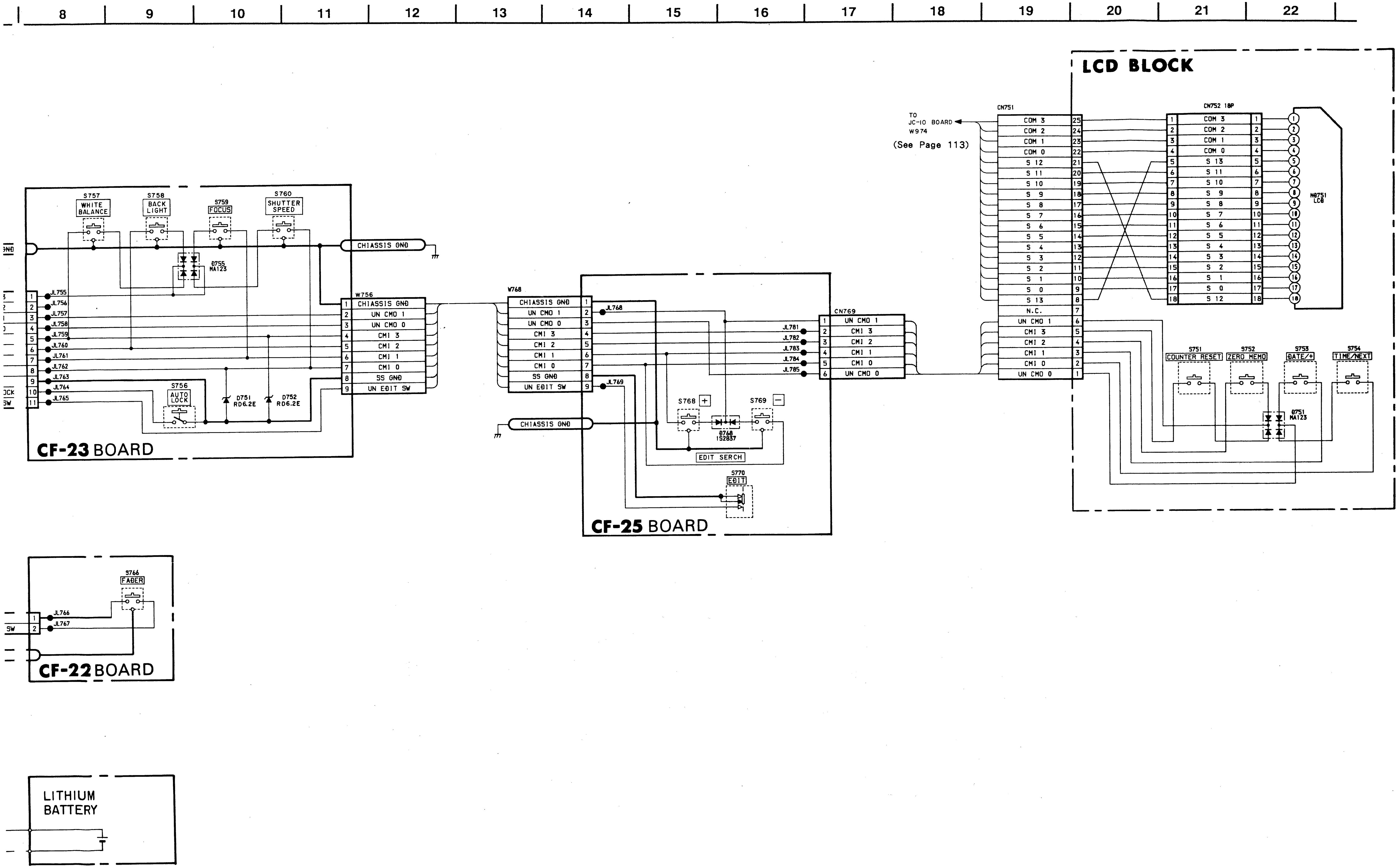

W766
1
2
S766
FADER
-636-550-
11

CB-34 (RELAY), CF-22, CF-23, CF-25 (CAMERA FUNCTION) SCHEMATIC DIAGRAMS

— Ref. No. CB-34, CF-23 BOARDS: 8000, CF-22 BOARD: 6000, CF-25 BOARD: 4000 series —



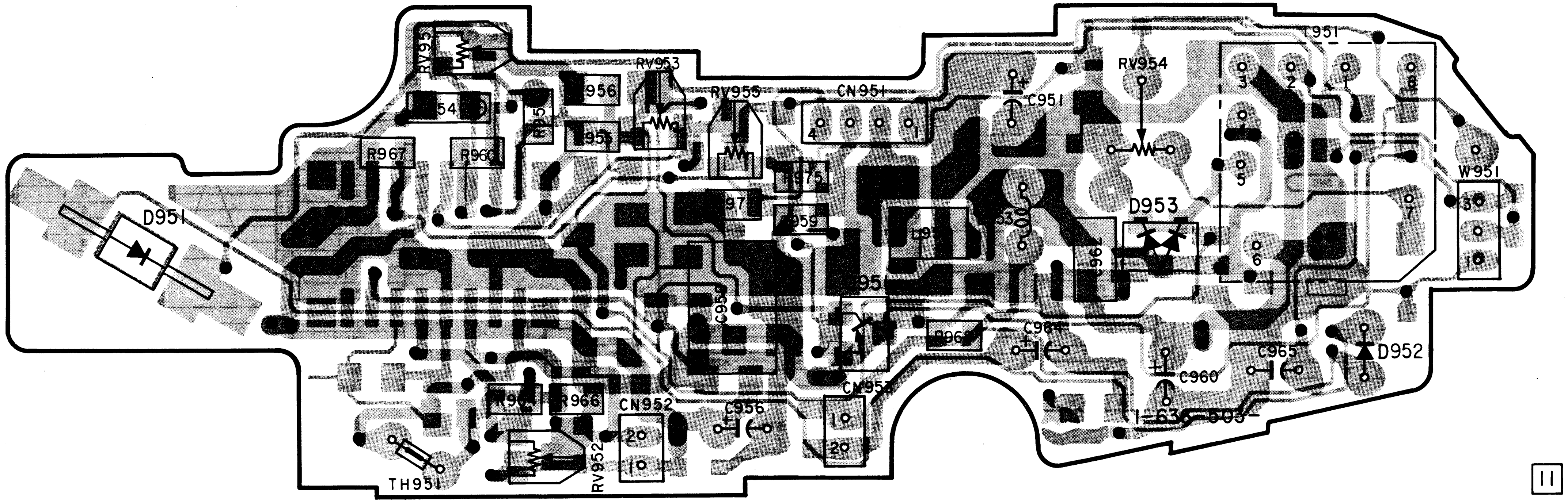
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J
CN975
UN CMD 3
UN CMD 2
UN CMD 1
UN CMD 0
CMI 3
CMI 2
CMI 1
CMI 0
UN FADER SW
SS GND
UN AUTO LOCK
UN EDIT SW
SERIAL CONT
DC OUT
LI 3V
SS GND
TO VC-81 BOARD CN804
(See Page 114)
R930 2200
R931 2200
R932 2200
R933 2200
W979
UN AUTO LOCK
UN EDIT SW
CN976
DC OUT
SERIAL CONT
SS GND
TO FK-41 BOARD CN904
(See Page 180)
CN978
SS GND
UN FADER SW
CN977
LI 3V
SS GND
CB-34 BOARD
CHIASSIS GND
W755
JL755
JL756
JL757
JL758
JL759
JL760
JL761
JL762
JL763
JL764
JL765
S757 WHITE BALANCE
S758 BACK LIGHT
S759 FOCUS
S760 SHUTTER SPEED
D755 MA123
S756 AUTO LOCK
D751 RD6.2E
D752 RD6.2E
W756
CF-23 BOARD
W766
SS GND
UN FADER SW
JL766
JL767
S766 FADER
N.C.
CF-22 BOARD
LITHIUM BATTERY
W768
CHIASSIS GND
UN CMD 1
UN CMD 0
CMI 3
CMI 2
CMI 1
CMI 0
SS GND
UN EDIT SW
JL768
JL769
S768 +
S769 -
D768 1S2837
EDIT SERCH
S770 EDIT
CF-25 BOARD
09


8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
LCD BLOCK
TO
JC-10 BOARD
W974
(See Page 113)
CN751
COM 3
COM 2
COM 1
COM 0
S 12
S 11
S 10
S 9
S 8
S 7
S 6
S 5
S 4
S 3
S 2
S 1
S 0
S 13
N.C.
UN CMO 1
CMI 3
CMI 2
CMI 1
CMI 0
UN CMO 0
CN752 18P
ND751
LCD
S751
COUNTER RESET
S752
ZERO MEMO
S753
DATE/+
S754
TIME/NEXT
D751
MA123
S757
WHITE BALANCE
S758
BACK LIGHT
S759
FOCUS
S760
SHUTTER SPEED
D755
MA123
CHIASSIS GND
JL755
JL756
JL757
JL758
JL759
JL760
JL761
JL762
JL763
JL764
JL765
W756
CHIASSIS GND
UN CMO 1
UN CMO 0
CMI 3
CMI 2
CMI 1
CMI 0
SS GND
UN EDIT SW
S756
AUTO LOCK
D751
RD6.2E
D752
RD6.2E
CF-23 BOARD
W768
JL768
JL769
CN769
JL781
JL782
JL783
JL784
JL785
S768 +
S769 −
D768
1S2837
EDIT SERCH
S770
EDIT
CF-25 BOARD
S766
FADER
JL766
JL767
CF-22 BOARD
LITHIUM
BATTERY

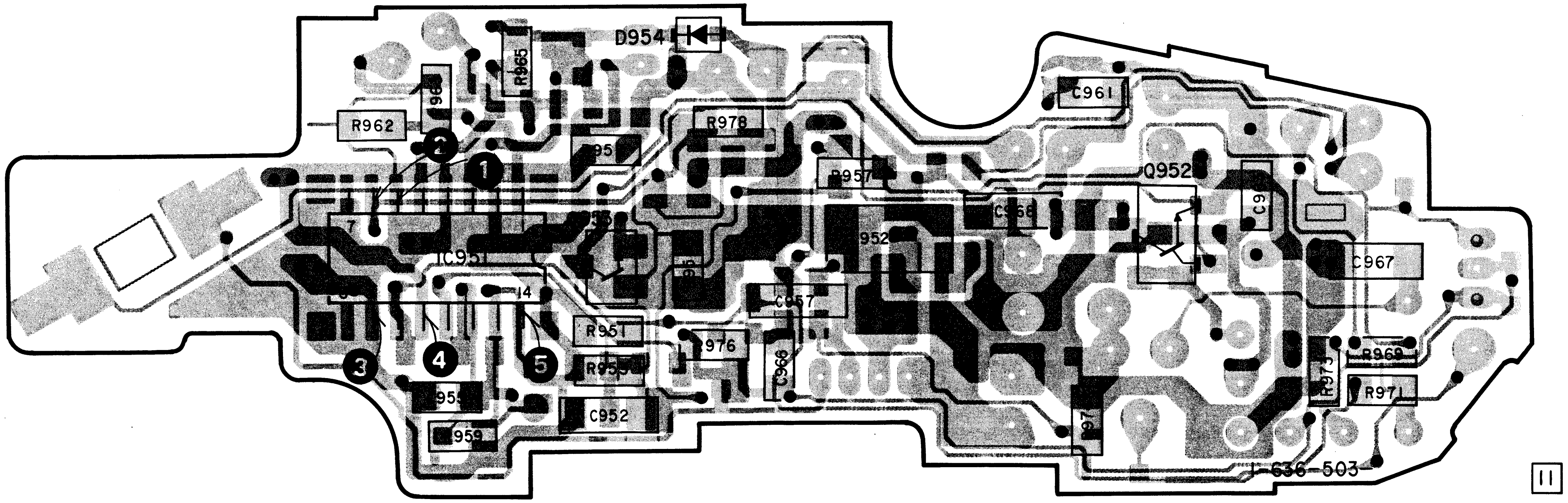
VF-41 (ELECTRICAL VIEWFINDER) PRINTED WIRING BOARD

— Ref. No. VF-41 BOARD: 9000 series —

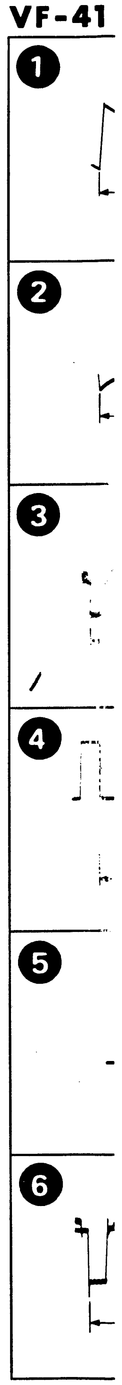
VF-41 BOARD (COMPONENT SIDE)

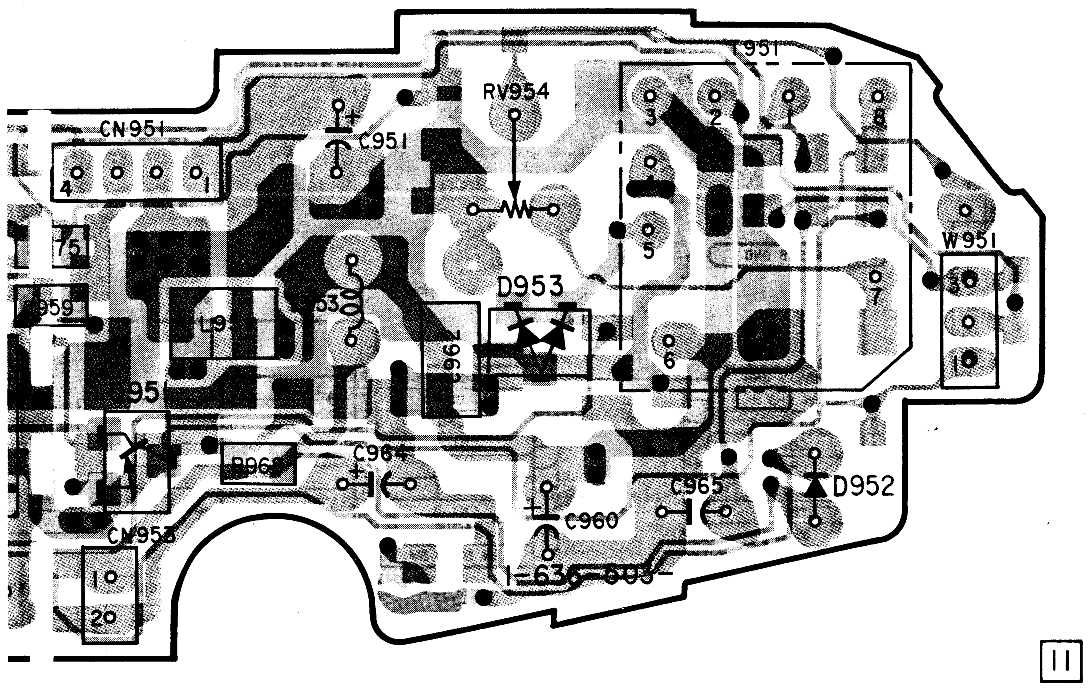

RV951
R967
R960
R95
956
955
RV953
RV955
CN951
4
C951
RV954
T951
3
2
1
8
5
7
6
W951
3
1
D951
D953
97
959
957
L95
95
R96
C964
C965
D952
C960
CN953
1
2
C956
CN952
2
1
R964
R966
RV952
TH951
1-636-503-
11

VF-41 BOARD (CONDUCTOR SIDE)

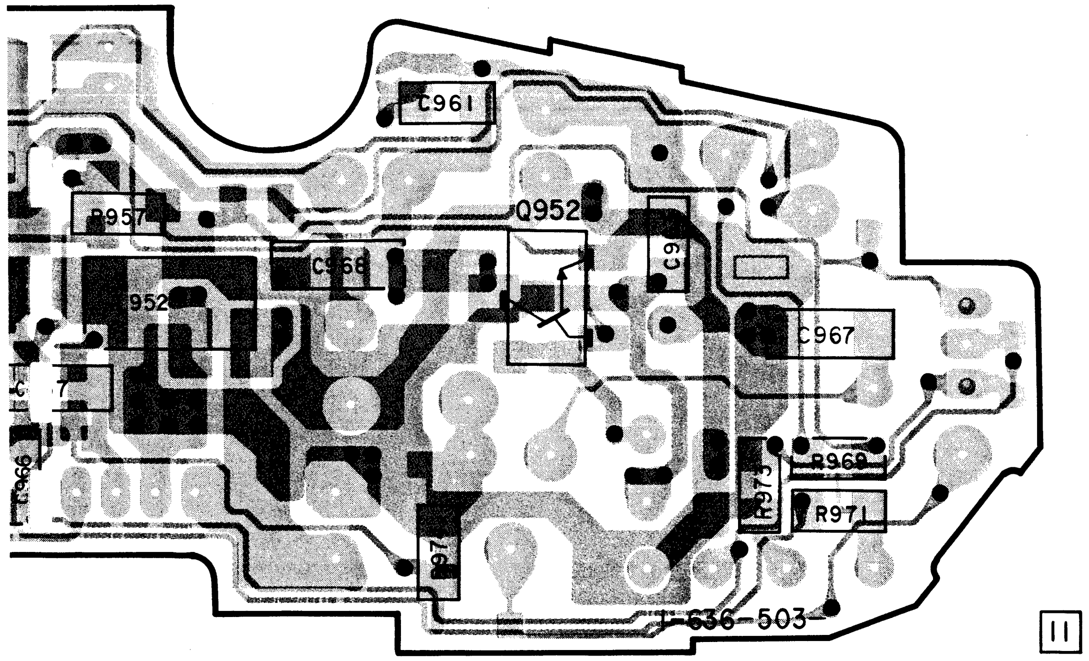

D954
R965
R962
C961
R978
951
R957
Q952
C9
❷
❶
7
IC951
14
C956
952
C967
C957
R951
R953
R976
C968
❸
❹
❺
955
959
C952
R969
R973
R971
97
1-636-503-
11

09


VF-41
❶
❷
❸
❹
❺
❻

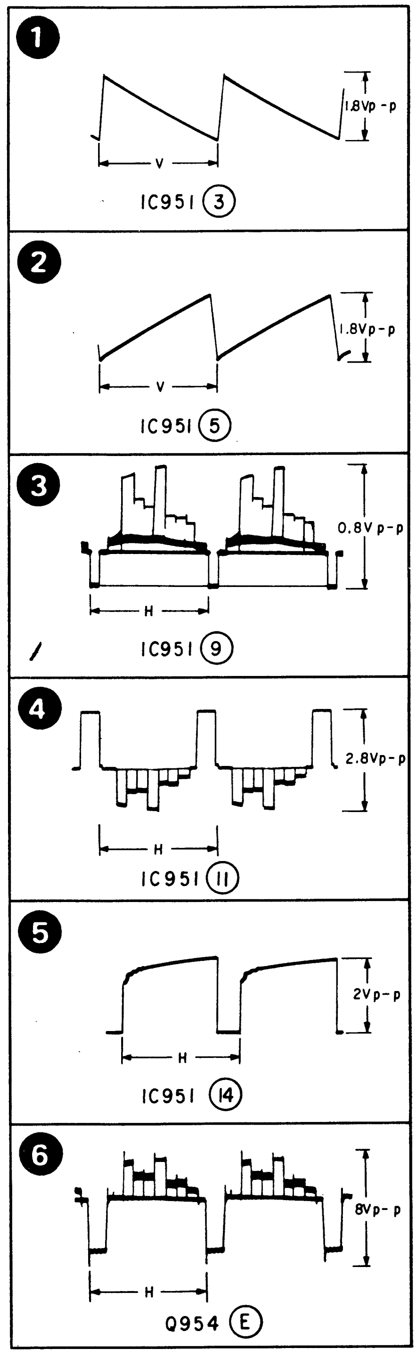

CN951
4
1
C951
RV954
IC951
3
2
1
8
5
7
6
W951
3
1
D953
L95
C96
R962
C964
C965
C960
D952
CN953
1
2
1-636-503-

11


C961
R957
Q952
C9
C968
952
C967
R969
R973
R971
C966
97
1-636-503-

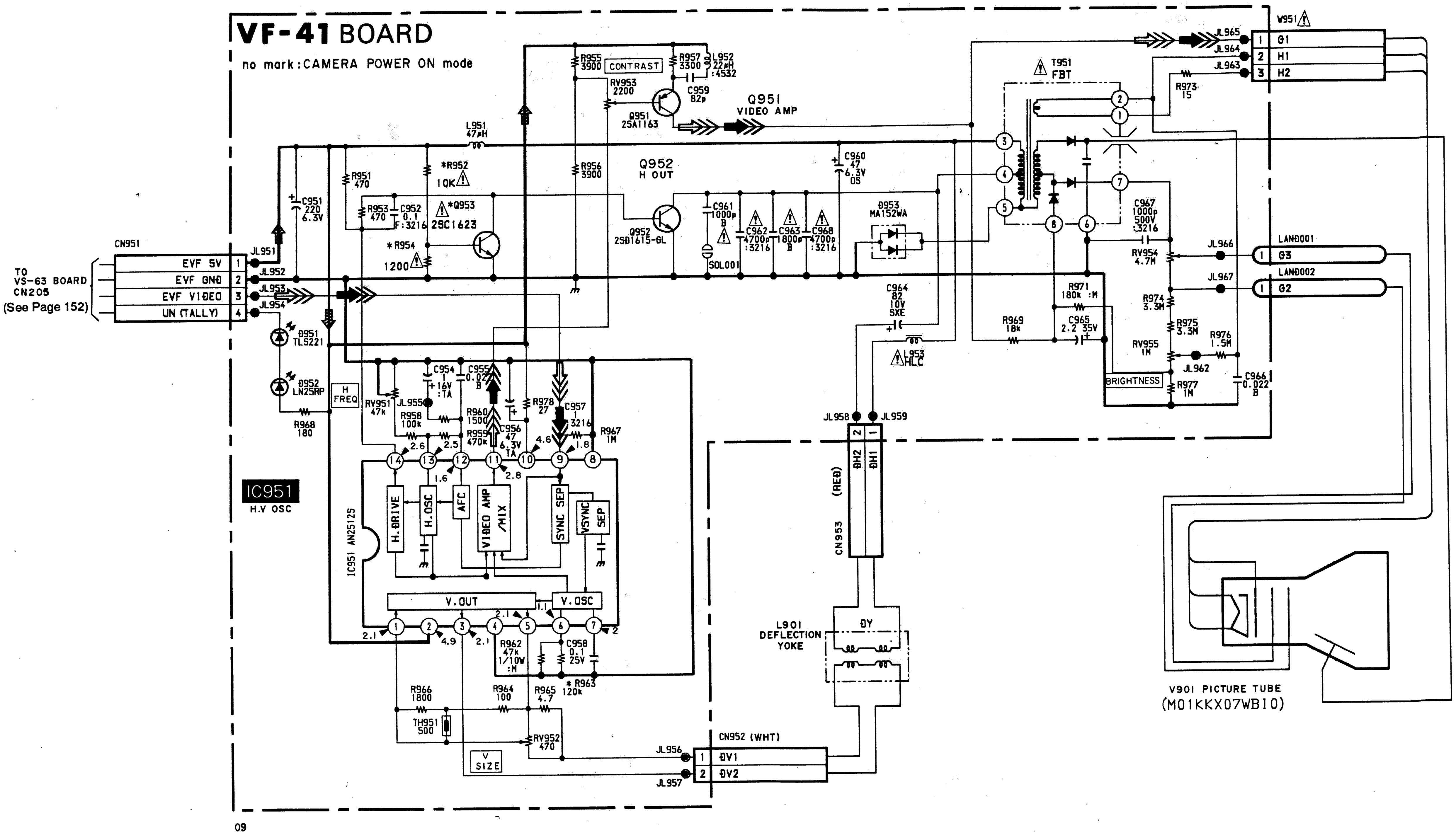
11

VF-41 BOARD



VF-41 (ELECTRICAL VIEWFINDER) SCHEMATIC DIAGRAM

— Ref. No. VF-41 BOARD: 9000 series —

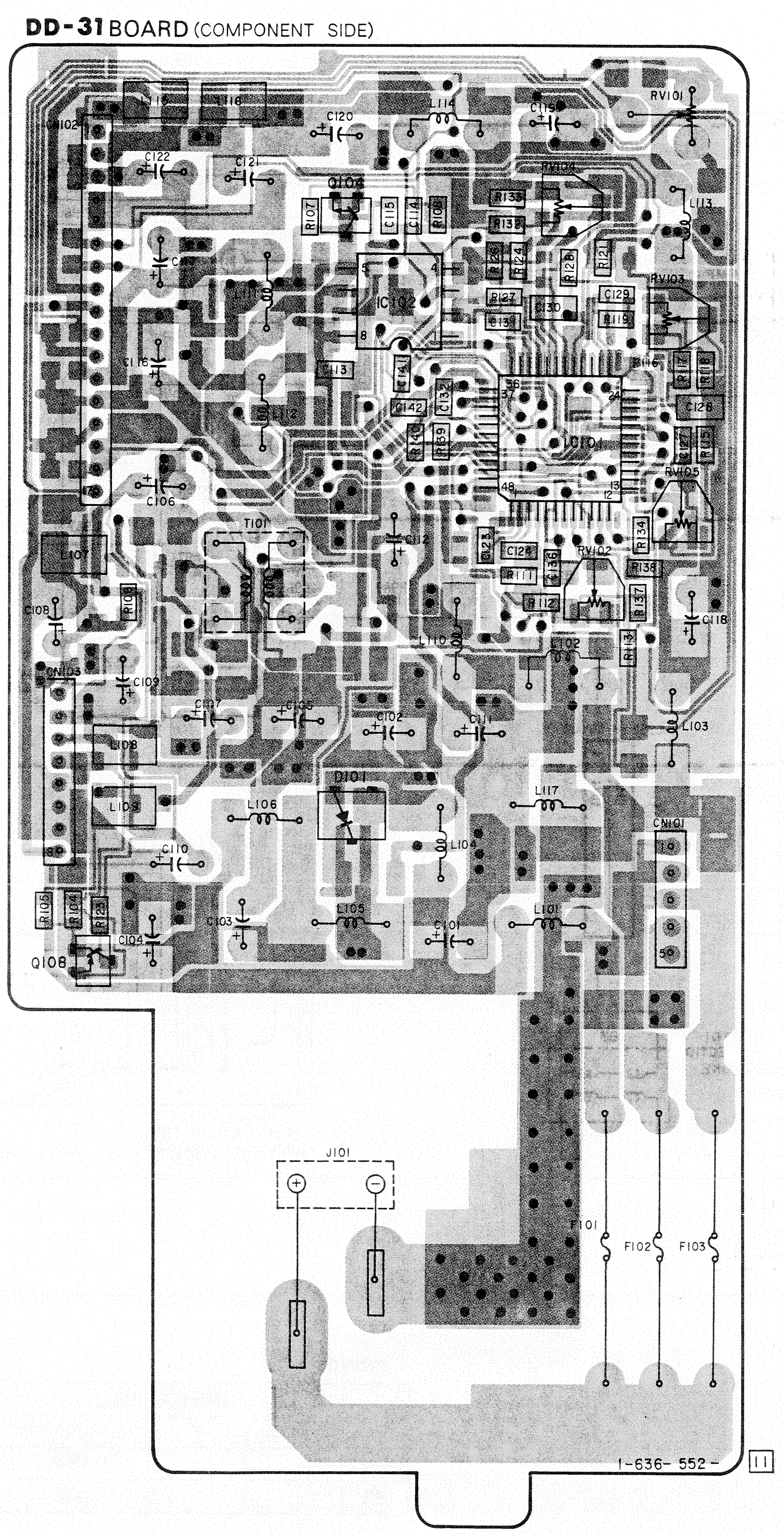

VF-41 BOARD
no mark : CAMERA POWER ON mode
CN951
TO VS-63 BOARD CN205 (See Page 152)
EVF 5V
EVF GND
EVF VIDEO
UN (TALLY)
JL951
JL952
JL953
JL954
C951 220 6.3V
R951 470
R953 470
C952 0.1 F:3216
*Q953 2SC1623
*R952 10K
*R954 1200
L951 47μH
R955 3900
CONTRAST
RV953 2200
R957 3300
L952 22μH :4532
C959 82p
Q951 2SA1163
Q951 VIDEO AMP
R956 3900
Q952 H OUT
Q952 2SD1615-GL
C961 1000p B
SOL001
C962 4700p :3216
C963 1800p B
C968 4700p :3216
C960 47 6.3V OS
D953 MA152WA
C964 82 10V SXE
L953 HLC
T951 FBT
D951 TLS221
D952 LN25RP
H FREQ
R968 180
RV951 47k
JL955
C954 1 16V :TA
C955 0.022 B
R958 100k
R960 1500
R959 470k
C956 47 6.3V TA
R978 27
C957 1 :3216
R967 1M
IC951
H.V OSC
IC951 AN2512S
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
R962 47k 1/10W :M
C958 0.1 25V
R966 1800
TH951 500
R964 100
R965 4.7
*R963 120k
RV952 470
V SIZE
JL956
JL957
CN952 (WHT)
DV1
DV2
JL958
JL959
CN953 (RED)
DH2
DH1
L901 DEFLECTION YOKE
DY
R969 18k
R971 180k :M
C965 2.2 35V
RV955 1M
BRIGHTNESS
R977 1M
JL962
C966 0.022 B
R976 1.5M
R975 3.3M
R974 3.3M
RV954 4.7M
C967 1000p 500V :3216
JL966
JL967
LAND001
G3
LAND002
G2
W951
G1
H1
H2
JL965
JL964
JL963
R973 15
V901 PICTURE TUBE (M01KKX07WB10)
09

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC			➡	
PB			⇨	

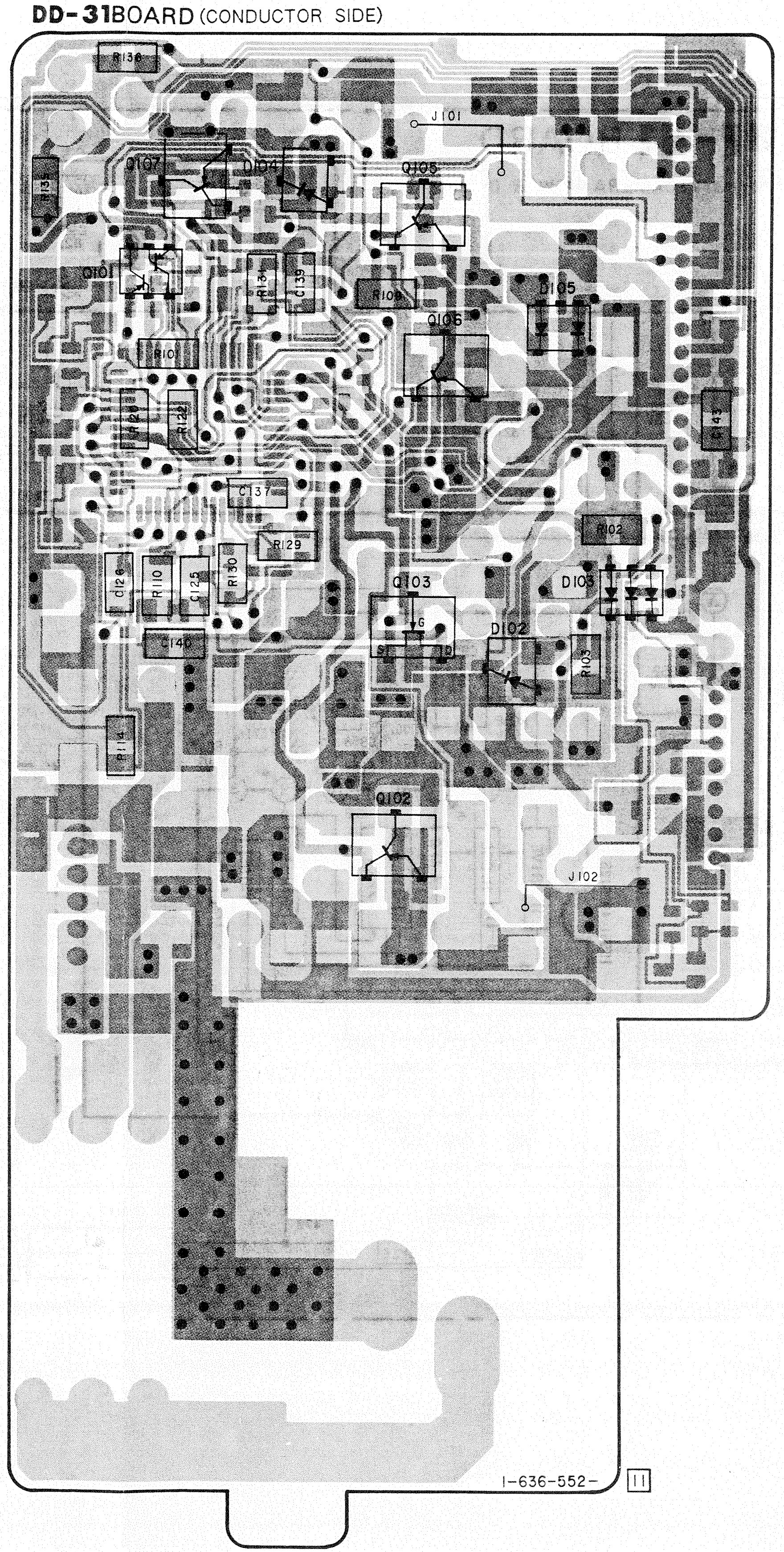
DD-31 (BATTERY TERMINAL/DC-DC CONVERTER) PRINTED WIRING BOARD

— Ref. No. DD-31 BOARD: 7000 series —



DD-31 BOARD (COMPONENT SIDE)

CN102
L115
L116
C120
L114
C119
RV101
C122
C121
Q104
RV104
R133
R132
L113
R107
C115
C114
R108
IC102
R126
R124
R128
R121
RV103
C129
R127
C130
R119
R116
C116
C113
R141
C132
R142
R117
R118
C126
L112
R140
IC101
RV105
C106
T101
C112
R123
C128
C136
RV102
R134
R138
L107
R109
C108
R111
R112
R137
C118
L110
L102
R113
CN103
C109
C117
C105
C102
C111
L103
L108
D101
L117
CN101
L109
L106
L104
C110
R106
R104
R125
C103
L105
C101
L101
C104
Q108
J101
F101
F102
F103
1-636-552-11

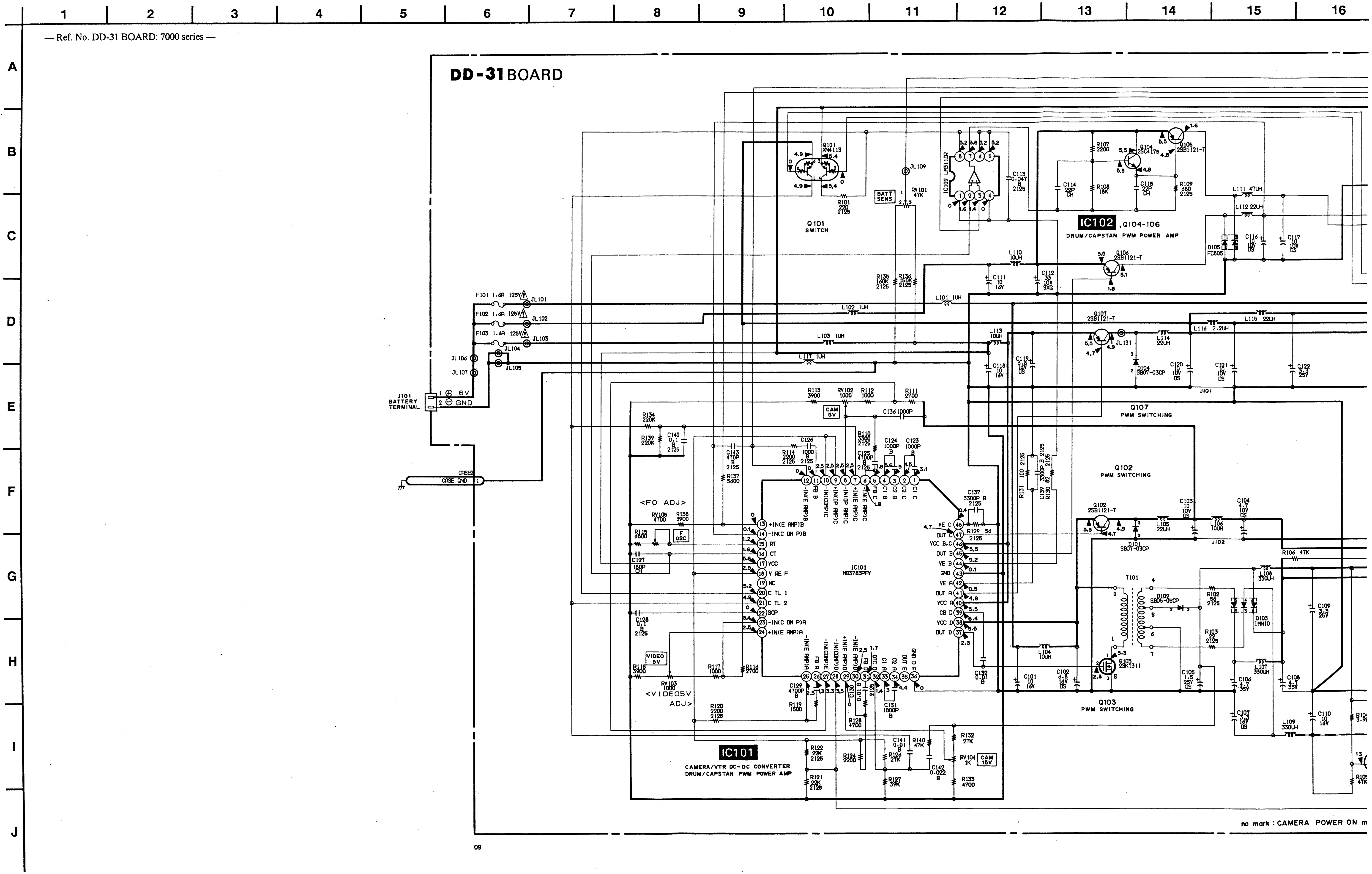


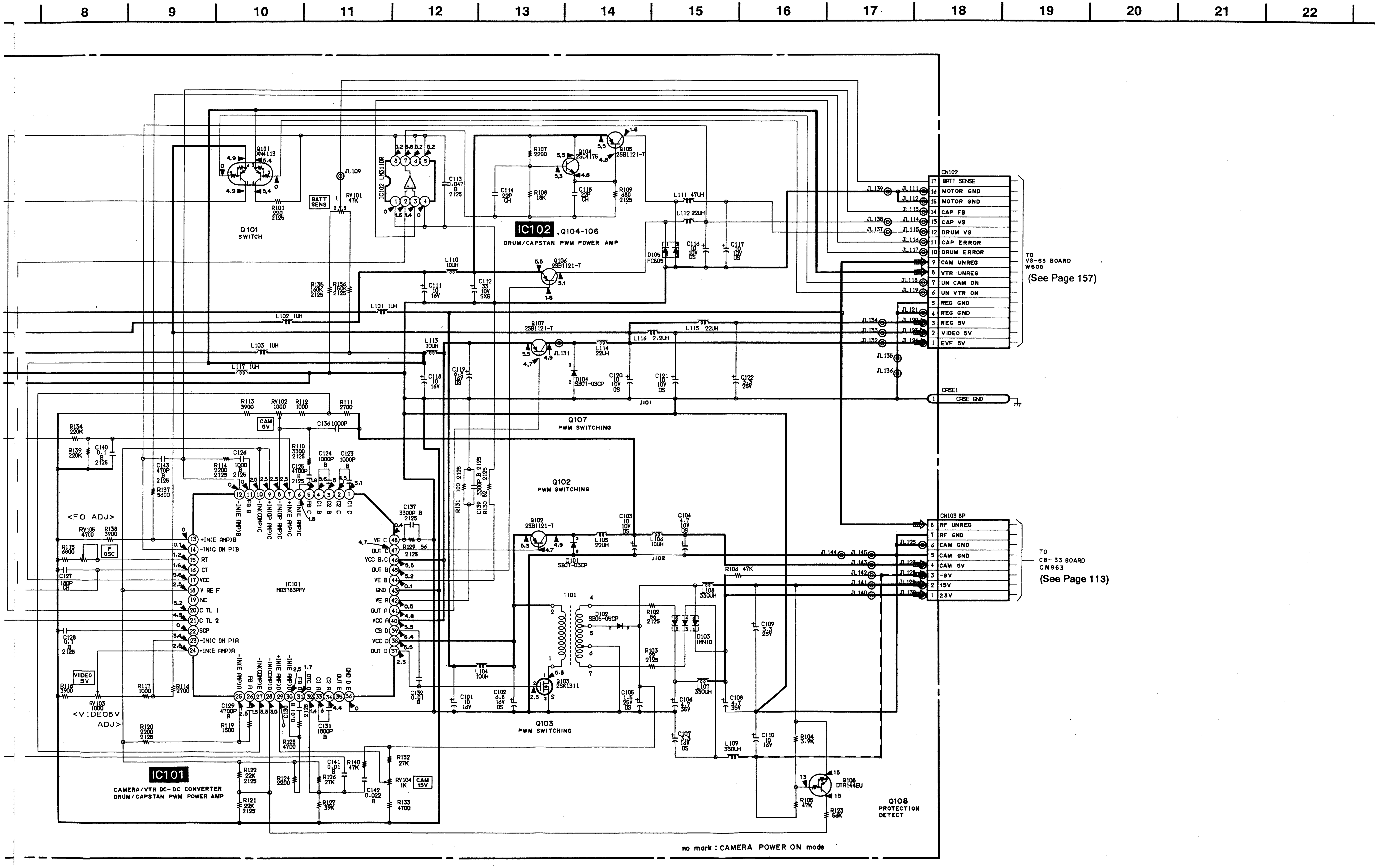
DD-31 BOARD (CONDUCTOR SIDE)

R136
J101
Q107
D104
Q105
R115
Q101
R131
C139
R105
D105
Q106
R101
R143
R120
R122
C137
R102
R129
R110
C125
R130
Q103
D103
C140
D102
R103
R114
Q102
J102
1-636-552-11

DD-31 (BATTERY TERMINAL/DC-DC CONVERTER) SCHEMATIC DIAGRAM

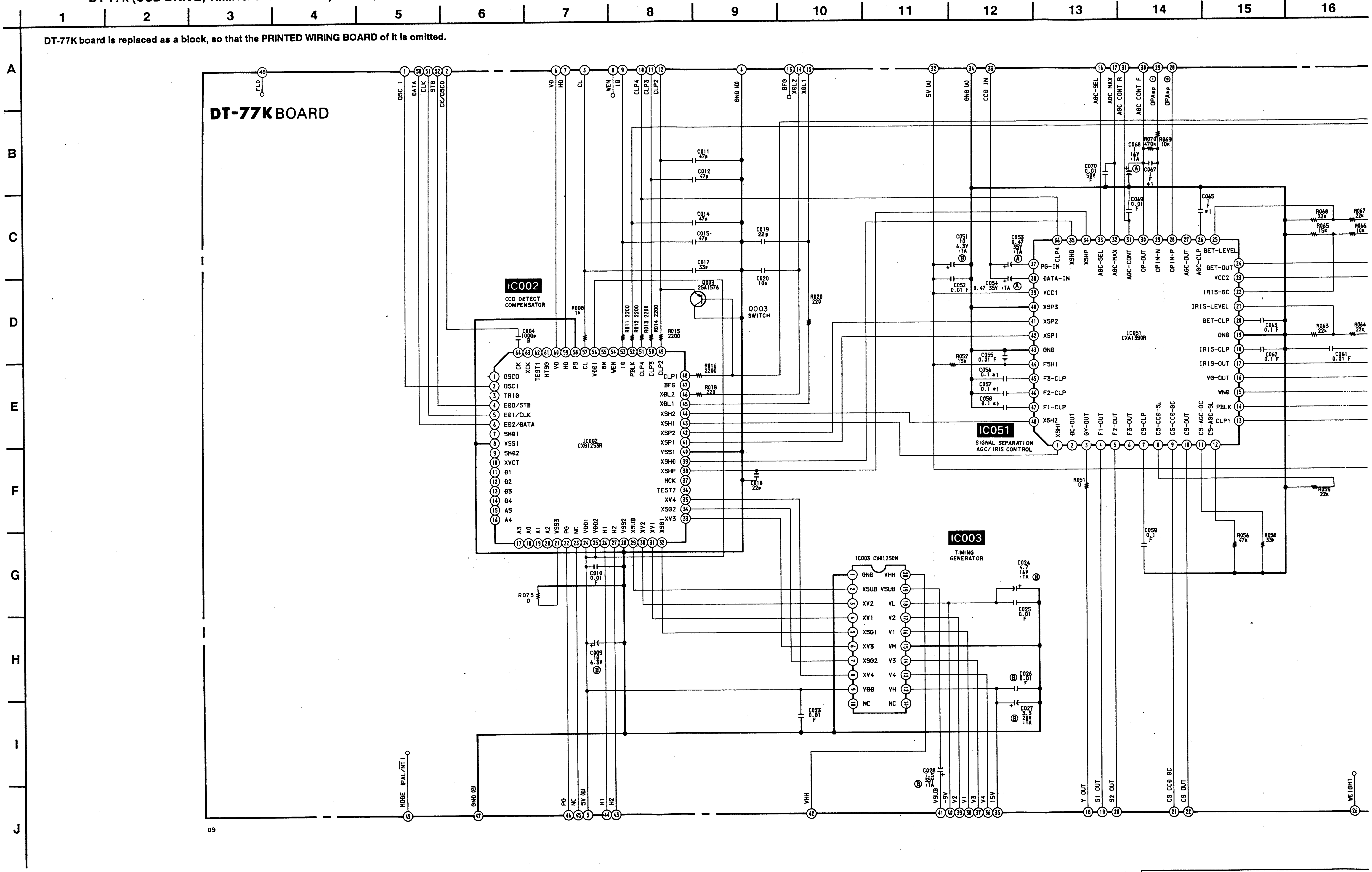
— Ref. No. DD-31 BOARD: 7000 series —


DD-31 BOARD
J101 BATTERY TERMINAL
1 ⊕ 6V
2 ⊖ GND
F101 1.6A 125V
F102 1.6A 125V
F103 1.6A 125V
JL101
JL102
JL103
JL104
JL105
JL106
JL107
CASE GND
Q101 XN4113
Q101 SWITCH
BATT SENS
RV101 47K
JL109
IC102 LM311DR
IC102, Q104-106
DRUM/CAPSTAN PWM POWER AMP
Q104 2SC4175
Q105 2SB1121-T
Q106 2SB1121-T
D105 FC805
L111 47UH
L112 22UH
Q107 2SB1121-T
Q107 PWM SWITCHING
JL131
D104 SB07-03CP
L114 22UH
L115 22UH
L116 2.2UH
J101
<FO ADJ>
RV105 4700
F OSC
CAM 5V
IC101 MB3763PFV
VIDEO 5V
RV103 1000
<VIDEO5V ADJ>
IC101
CAMERA/VTR DC-DC CONVERTER
DRUM/CAPSTAN PWM POWER AMP
RV104 1K
CAM 15V
Q102 2SB1121-T
Q102 PWM SWITCHING
D101 SB07-03CP
L105 22UH
L106 10UH
J102
T101
D102 SB05-05CP
D103 1MN10
Q103 2SK1311
Q103 PWM SWITCHING
L104 10UH
L107 330UH
L108 330UH
L109 330UH
R106 47K
no mark : CAMERA POWER ON m

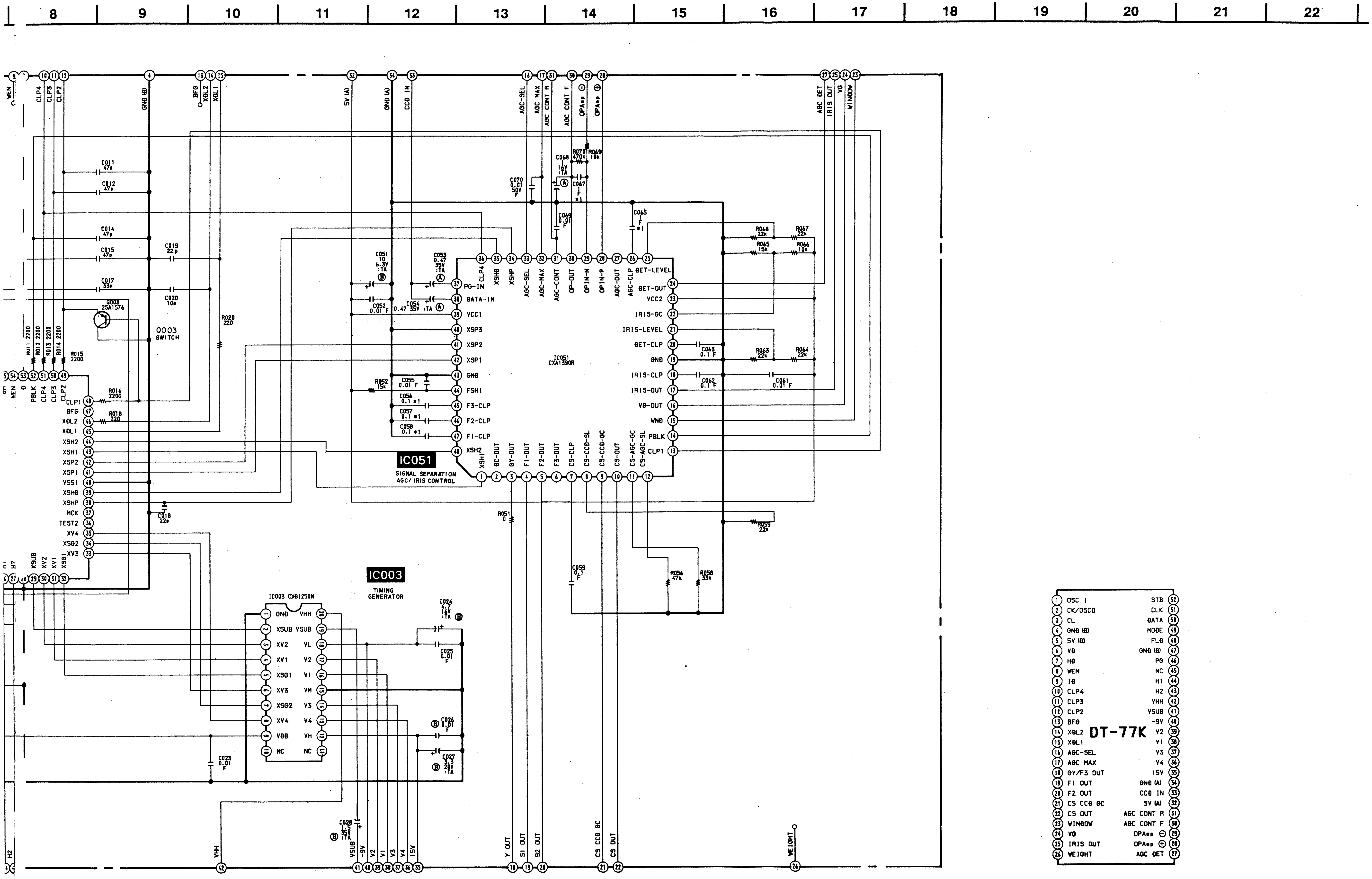

8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Q101 XN4113
Q101 SWITCH
R101 220 2125
BATT SENS
RV101 47K
JL109
IC102 LM311DR
C113 0.047 B 2125
R107 2200
Q104 2SC4175
Q105 2SB1121-T
C114 22P CH
R108 18K
C115 22P CH
R109 680 2125
IC102 ,Q104-106
DRUM/CAPSTAN PWM POWER AMP
L111 47UH
L112 22UH
D105 FC805
C116 10 10V 0S
C117 10 10V 0S
L110 10UH
Q106 2SB1121-T
C111 10 16V
C112 33 10V SXG
R135 160K 2125
R136 160K 2125
L101 1UH
L102 1UH
L103 1UH
L117 1UH
L113 10UH
Q107 2SB1121-T
JL131
L114 22UH
L116 2.2UH
L115 22UH
D104 SB07-03CP
C118 10 16V
C119 6.8 16V 0S
C120 10 10V 0S
C121 10 10V 0S
C122 3.3 25V
J101
Q107 PWM SWITCHING
R113 3900
RV102 1000
R112 1000
R111 2700
CAM 5V
C136 1000P
R134 220K
R139 220K
C140 0.1 B 2125
C143 470P B 2125
R137 5600
R114 2200 2125
C126 1000 B 2125
R110 3300 2125
C125 4700P B 2125
C124 1000P B
C123 1000P B
<FO ADJ>
RV105 4700
R138 3900
R115 6800
F OSC
C127 180P CH
C128 0.1 B 2125
VIDEO 5V
R118 3900
RV103 1000
<VIDEO5V ADJ>
R117 1000
R116 2700
R120 2200 2125
C129 4700P B
R119 1500
R128 4700
C130 0.1 B
C131 1000P B
C141 0.01 B
R140 47K
R132 27K
RV104 1K
CAM 15V
C142 0.022 B
R133 4700
R122 22K 2125
R124 2200
R126 27K
R127 39K
R121 22K 2125
IC101
CAMERA/VTR DC-DC CONVERTER
DRUM/CAPSTAN PWM POWER AMP
IC101 MB3763PFV
+INE AMP)B
-INC ON P)B
RT
CT
VCC
V REF
NC
C TL 1
C TL 2
SCP
-INC ON P)A
+INE AMP)A
VE C
OUT C
VCC B.C
OUT B
VE B
GND
VE A
OUT A
VCC A
CB D
VCC D
OUT D
C137 3300P B 2125
R129 56 2125
C132 0.01 B
R131 100 2126
C139 3300P B 2125
R130 82 2125
Q102 PWM SWITCHING
Q102 2SB1121-T
L105 22UH
L106 10UH
C103 10 10V 0S
C104 4.7 10V 0S
J102
D101 SB07-03CP
R106 47K
L108 330UH
T101
D102 SB05-05CP
R102 56 2125
D103 1MN10
R103 22 2125
L104 10UH
C101 10 16V
C102 6.8 16V 0S
Q103 2SK1311
Q103 PWM SWITCHING
C105 1.5 25V 0S
C106 4.7 35V
L107 330UH
C108 4.7 35V
C109 3.3 25V
C107 4.7 16V 0S
L109 330UH
C110 10 16V
R104 3.9K
Q108 DTA144EU
R105 47K
R123 56K
Q108 PROTECTION DETECT
CN102
17 BATT SENSE
16 MOTOR GND
15 MOTOR GND
14 CAP FB
13 CAP VS
12 DRUM VS
11 CAP ERROR
10 DRUM ERROR
9 CAM UNREG
8 VTR UNREG
7 UN CAM ON
6 UN VTR ON
5 REG GND
4 REG GND
3 REG 5V
2 VIDEO 5V
1 EVF 5V
TO VS-63 BOARD W605
(See Page 157)
JL135
JL136
CASE1
1 CASE GND
CN103 8P
8 RF UNREG
7 RF GND
6 CAM GND
5 CAM GND
4 CAM 5V
3 -9V
2 15V
1 23V
TO CB-33 BOARD CN963
(See Page 113)
no mark : CAMERA POWER ON mode

DT-77K (CCD DRIVE, TIMING GENERATOR) SCHEMATIC DIAGRAMS

DT-77K board is replaced as a block, so that the PRINTED WIRING BOARD of it is omitted.



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J
DT-77K BOARD
IC002
CCD DETECT COMPENSATOR
IC002 CXB1253R
IC003
TIMING GENERATOR
IC003 CXB1250N
IC051
SIGNAL SEPARATION AGC/ IRIS CONTROL
IC051 CXA1390R
Q003 2SA1576
Q003 SWITCH
FLD
OSC 1
DATA
CLK
STB
CK/OSCO
VD
HD
CL
WEN
ID
CLP4
CLP3
CLP2
GND (D)
BFG
XOL2
XOL1
5V (A)
GND (A)
CCD IN
AGC-SEL
AGC MAX
AGC CONT R
AGC CONT F
OPAmp ⊖
OPAmp ⊕
OSCO
OSCI
TRIG
EOO/STB
EO1/CLK
EO2/DATA
SMD1
VSS1
SMD2
XVCT
Ø1
Ø2
Ø3
Ø4
A5
A4
CLP1
XSH2
XSH1
XSP2
XSP1
XSHD
XSHP
MCK
TEST2
XV4
XSG2
XV3
XSUB
XV2
XV1
XSG1
VSS2
H2
H1
VDD2
VDD1
NC
PG
VSS3
A2
A1
A0
A3
GND
VHH
VSUB
VL
V2
V1
VM
V3
V4
VH
VDD
PG-IN
DATA-IN
VCC1
XSP3
FSHI
F3-CLP
F2-CLP
F1-CLP
DET-LEVEL
DET-OUT
VCC2
IRIS-GC
IRIS-LEVEL
DET-CLP
IRIS-CLP
IRIS-OUT
VG-OUT
WND
PBLK
DC-OUT
DY-OUT
F1-OUT
F2-OUT
F3-OUT
CS-CLP
CS-CCD-SL
CS-CCD-DC
CS-OUT
CS-AGC-DC
CS-AGC-SL
OP-OUT
OPIN-N
OPIN-P
AGC-OUT
AGC-CLP
MODE (PAL/NT)
GND (D)
PG
NC
5V (D)
H1
H2
VHH
VSUB
-9V
V2
V1
V3
V4
15V
Y OUT
S1 OUT
S2 OUT
CS CCD DC
CS OUT
WEIGHT
C004 1000p B
R008 1k
C011 47p
C012 47p
C014 47p
C015 47p
C017 33p
C019 22p
C020 10p
R011 2200
R012 2200
R013 2200
R014 2200
R015 2200
R016 2200
R018 220
R020 220
C018 22p
C010 0.01 F
R075 0
C009 10 6.3V Ⓑ
C023 0.01 F
C024 4.7 16V :TA Ⓑ
C025 0.01 F
C026 0.01 F
C027 3.3 20V :TA Ⓑ
C028 1.5 35V :TA Ⓑ
C051 10 6.3V :TA Ⓑ
C052 0.01 F
C053 0.47 35V :TA Ⓐ
C054 0.47 35V :TA Ⓐ
C055 0.01 F
C056 0.1 *1
C057 0.1 *1
C058 0.1 *1
R052 15k
R051 0
C059 0.1 F
C061 0.01 F
C062 0.1 F
C063 0.1 F
R063 22k
R064 22k
C065 F *1
R065 15k
R066 10k
R067 22k
R068 22k
C067 F *1
C068 16V :TA Ⓐ
C069 0.01 F
C070 0.01 50V F
R069 10k
R070 470k
R056 47k
R058 33k
R059 22k
09

8
9
10
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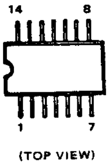
14
15
16
17
18
19
20
21
22
IC051
SIGNAL SEPARATION
AGC/ IRIS CONTROL
IC051
CXA1390R
PG-IN
DATA-IN
VCC1
XSP3
XSP2
XSP1
GND
FSHI
F3-CLP
F2-CLP
F1-CLP
XSH2
CLP4
XSHD
XSHP
AGC-SEL
AGC-MAX
AGC-CONT
OP-OUT
OPIN-N
OPIN-P
AGC-OUT
AGC-CLP
DET-LEVEL
DET-OUT
VCC2
IRIS-GC
IRIS-LEVEL
DET-CLP
GND
IRIS-CLP
IRIS-OUT
VG-OUT
WND
PBLK
CLP1
XSH1
DC-OUT
GY-OUT
F1-OUT
F2-OUT
F3-OUT
CS-CLP
CS-CCD-SL
CS-CCD-GC
CS-OUT
CS-AGC-GC
CS-AGC-SL
C051 10 6.3V :TA
C052 0.01 F
C053 0.47 35V :TA
C054 0.47 35V :TA
C055 0.01 F
C056 0.1 *1
C057 0.1 *1
C058 0.1 *1
R052 15k
R051 0
C062 0.1 F
C063 0.1 F
C061 0.01 F
C065 F *1
C069 0.01 F
C070 0.01 50V F
C068 16V :TA
C067 F *1
R070 470k
R069 10k
R068 22k
R067 22k
R065 15k
R064 10k
R063 22k
R064 22k
R059 22k
R054 47k
R058 33k
C059 0.1 F
C011 47p
C012 47p
C014 47p
C015 47p
C017 33p
C019 22p
C020 10p
C018 22p
R020 220
Q003 2SA1576
Q003 SWITCH
R011 2200
R012 2200
R013 2200
R014 2200
R015 2200
R016 2200
R018 220
IC003
TIMING GENERATOR
IC003 CXD1250N
GND
XSUB
XV2
XV1
XSG1
XV3
XSG2
XV4
VDD
NC
VHH
VSUB
VL
V2
V1
VM
V3
V4
VH
NC
C023 0.01 F
C024 4.7 16V :TA
C025 0.01 F
C026 0.01 F
C027 3.3 20V :TA
C028 1.5 35V :TA
WEN
CLP4
CLP3
CLP2
GND (D)
BFG
XDL2
XDL1
5V (A)
GND (A)
CCD IN
AGC-SEL
AGC MAX
AGC CONT R
AGC CONT F
OPAmp ⊖
OPAmp ⊕
AGC DET
IRIS OUT
VG
WINDOW
PBLK
CLP1
XSH2
XSH1
XSP2
XSP1
VSS1
XSHD
XSHP
MCK
TEST2
XV4
XSG2
XV3
XSUB
XV2
XV1
XSG1
VHH
VSUB
-9V
V2
V1
V3
V4
15V
Y OUT
S1 OUT
S2 OUT
CS CCD GC
CS OUT
WEIGHT
H2
DT-77K
1 OSC I
2 CK/OSCO
3 CL
4 GND (D)
5 5V (D)
6 VD
7 HD
8 WEN
9 ID
10 CLP4
11 CLP3
12 CLP2
13 BFG
14 XDL2
15 XDL1
16 AGC-SEL
17 AGC MAX
18 GY/F3 OUT
19 F1 OUT
20 F2 OUT
21 CS CCD GC
22 CS OUT
23 WINDOW
24 VG
25 IRIS OUT
26 WEIGHT
52 STB
51 CLK
50 DATA
49 MODE
48 FLD
47 GND (D)
46 PG
45 NC
44 H1
43 H2
42 VHH
41 VSUB
40 -9V
39 V2
38 V1
37 V3
36 V4
35 15V
34 GND (A)
33 CCD IN
32 5V (A)
31 AGC CONT R
30 AGC CONT F
29 OPAmp ⊖
28 OPAmp ⊕
27 AGC DET

4-3. SEMICONDUCTORS

AN2512S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(TOP VIEW)

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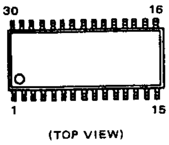
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(TOP VIEW)

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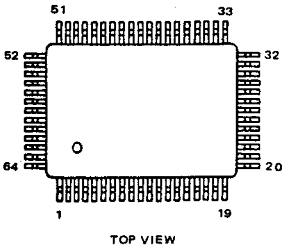
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TOP VIEW

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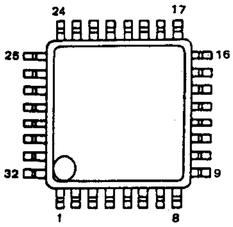
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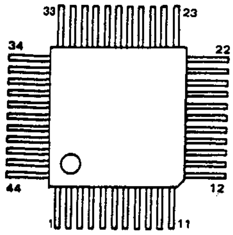
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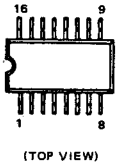
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(TOP VIEW)

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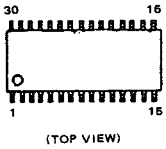
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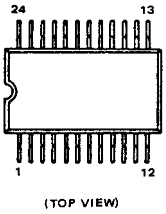
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(TOP VIEW)

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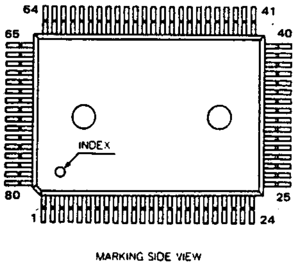
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MARKING SIDE VIEW

MB88341PFV
MB88346PFV
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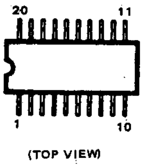
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(TOP VIEW)

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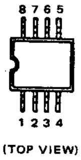
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(TOP VIEW)

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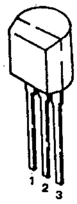

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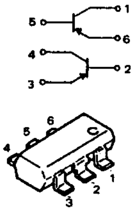
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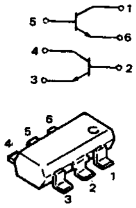
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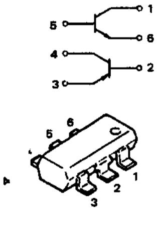
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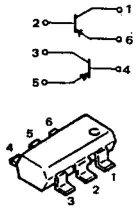
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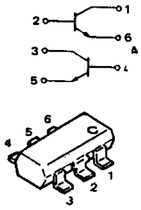
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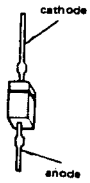
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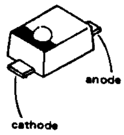
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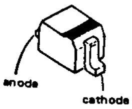
MA110
MA111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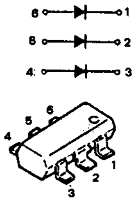
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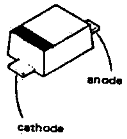
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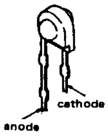
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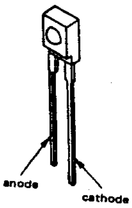
anode

TLR214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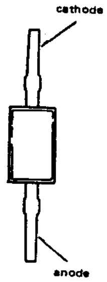
TLS221


cathode
anode

SECTION 5
EXPLODED VIEWS

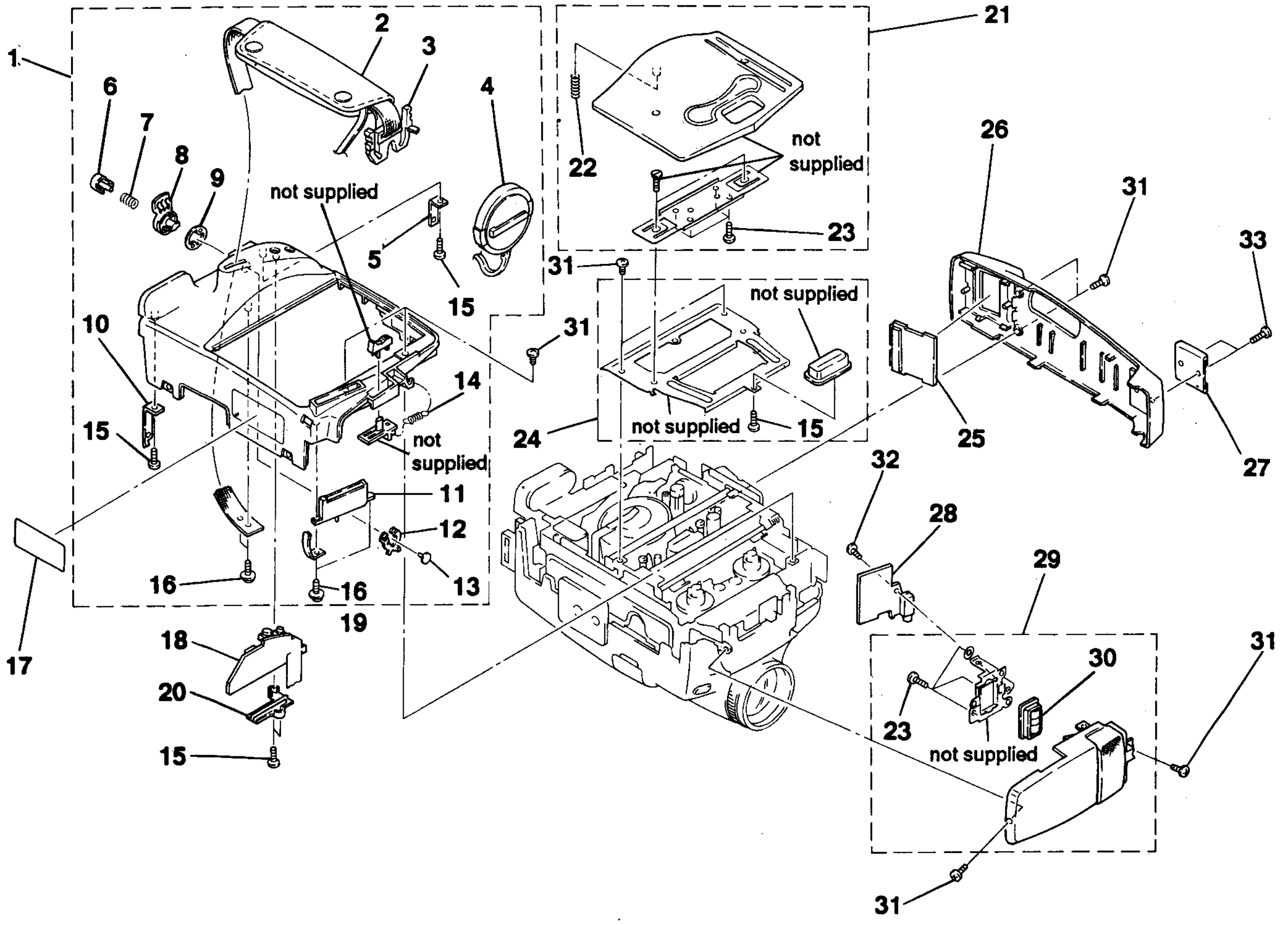
NOTE:

- –XX, –X mean standardized parts, so they may have some differences from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

5-1. CABINET (LEFT) BLOCK

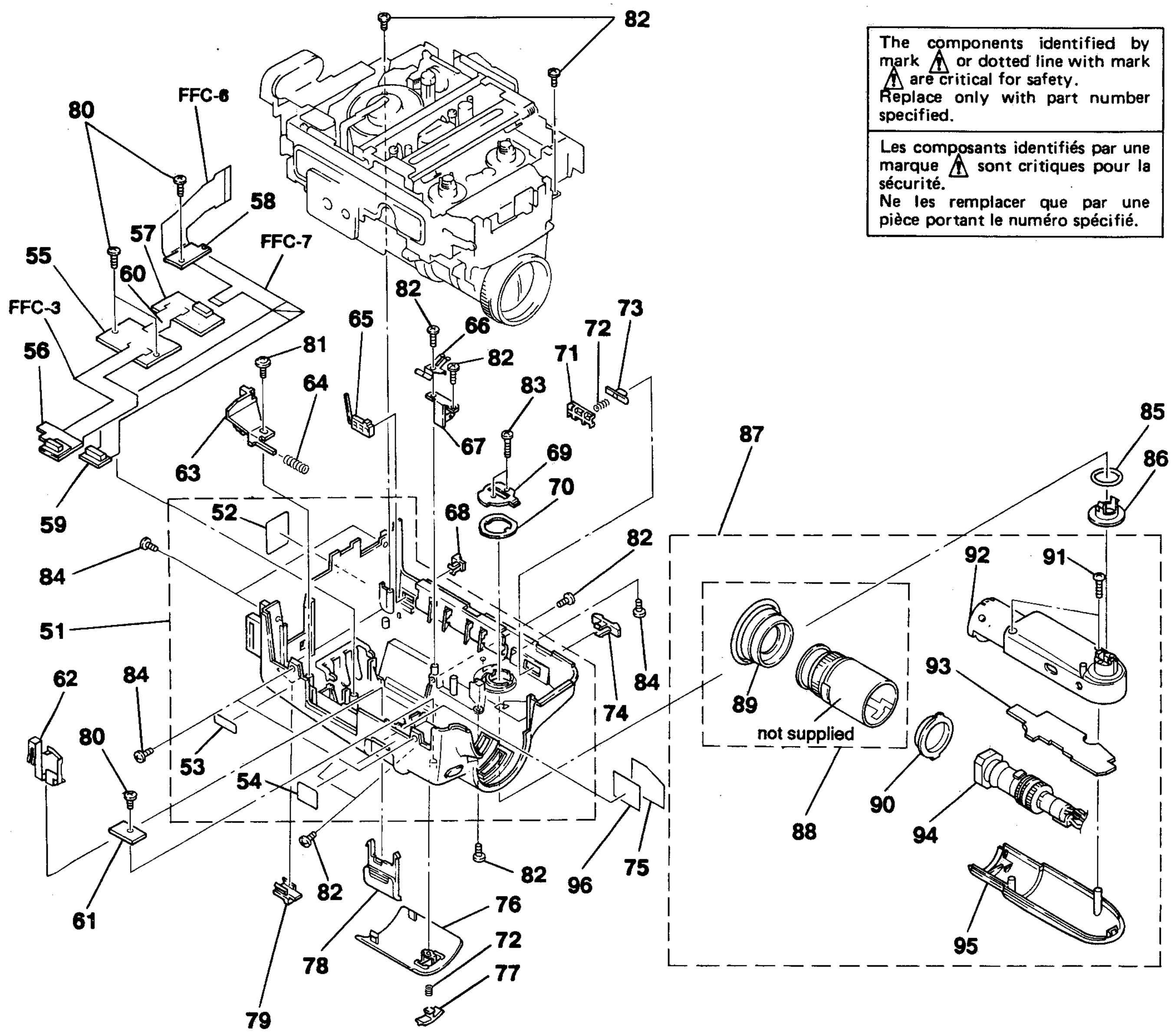


No.	Part No.	Description	Remark
1	A-7081-369-A	CABINET (L) BLOCK ASSY	2-16
2	3-749-909-01	BELT, GRIP	
3	3-749-907-01	HOLDER (M), GRIP BELT	
4	A-7091-015-B	CAP ASSY, LENS	
5	3-749-734-01	JOINT (B), LR	
6	3-736-343-01	BUTTON, S/S	
7	3-578-221-00	SPRING, COMPRESSION	
8	3-736-391-01	KNOB, STAND-BY	
9	3-736-364-01	SPRING	
10	3-749-733-01	JOINT, LR	
11	*3-749-908-01	HOLDER (F), GRIP BELT	
12	3-749-745-01	HOLDER, STAND-BY KNOB	
13	3-749-732-01	PIN, S/S RELAY	
14	3-674-402-00	SPRING, TENSION	
15	3-719-408-01	SCREW (B2), TAPPING, P3	
16	3-669-480-21	+ PTPWH 2	
17	*3-749-309-01	LABEL, MODEL NUMBER (U)(CCD-TR6)	
	*3-941-354-01	LABEL, MODEL NUMBER(E)(CCD-TR50)	
18	*A-7071-279-A	SW-158 BOARD, COMPLETE	
19	1-590-102-11	CABLE (FFC-1) (W941)	
20	3-749-746-01	RETAINER, SW PC BOARD	
21	A-7081-371-A	LID BLOCK ASSY, CASSETTE (CCD-TR6)	22, 23
	A-7081-492-A	LID BLOCK ASSY, CASSETTE(CCD-TR50)	22, 23
22	3-643-346-01	SPRING (B), COMPRESSION	
23	3-719-601-01	SCREW (B2X5), TAPPING	
24	A-7091-362-A	REINFORCEMENT ASSY, LID	15
25	1-809-146-11	DISPLAY BLOCK, LIQUID CRYSTAL	
26	X-3749-169-1	CABINET (T) ASSY	
27	3-724-511-01	SHOE, ACCESSORY	
28	A-7071-280-A	MA-71 BOARD, COMPLETE	
29	X-3749-166-1	CABINET (F) ASSY	23, 30
30	1-542-126-11	MICROPHONE UNIT	
31	3-719-381-01	SCREW (M2X4)	
32	3-713-786-51	SCREW (M2X3)	
33	3-719-831-01	SCREW (M2X6)	

5-2. CABINET (RIGHT) BLOCK

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.



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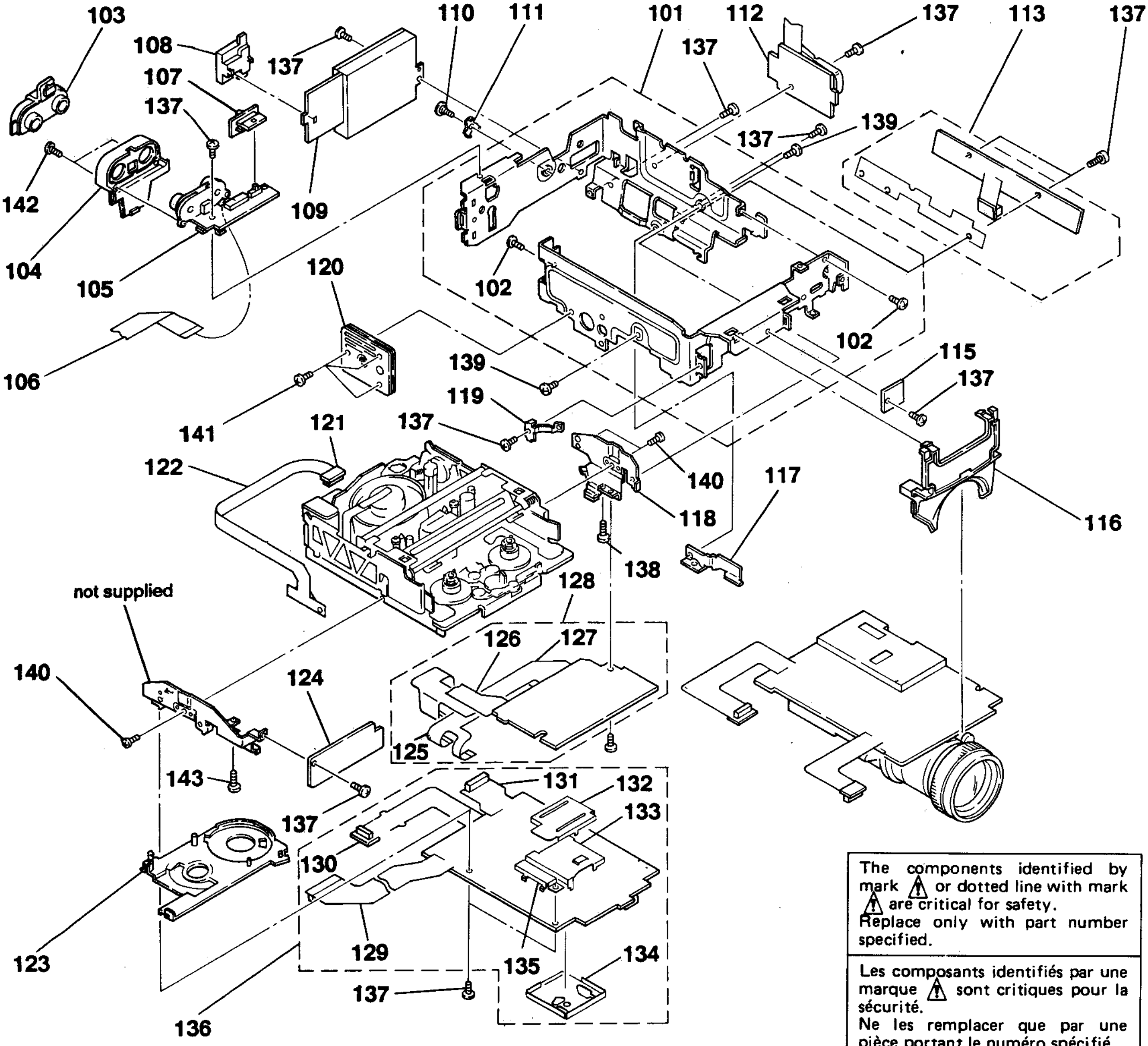
51	X-3749-170-1	CABINET (R) ASSY (CCD-TR6)	52-54
	X-3940-284-1	CABINET (R) ASSY (CCD-TR50)	52-54
52	*3-719-683-01	LABEL, BATTERY FITTING	
53	*3-704-367-01	LABEL (CCD-TR6)	
54	*3-704-256-01	LABEL, CAUTION	
55	*A-7071-274-A	CF-23 BOARD, COMPLETE	
56	*A-7071-275-A	CB-34 BOARD, COMPLETE	
57	*A-7071-276-A	CF-25 BOARD, COMPLETE	
58	*A-7071-277-A	JC-10 BOARD, COMPLETE	
59	*A-7071-278-A	CB-35 BOARD, COMPLETE	
60	1-636-589-11	FP-353 FLEXIBLE BOARD	
61	*A-7071-272-A	CF-22 BOARD, COMPLETE	
62	1-537-295-31	TERMINAL BOARD, LITHIUM	
63	3-749-770-01	LEVER, RELEASE	
64	2-226-804-00	SPRING, COMPRESSION	
65	3-749-771-01	HOLDER, KNOB	
66	3-749-754-01	PLATE, GROUND, LOCK	
67	X-3747-102-1	PIN ASSY, EVF LOCK	
68	3-749-756-01	BUTTON	
69	3-747-111-01	PLATE, LOCK, TILT	
70	3-747-110-01	SPRING, LEAF, TILT	
71	3-749-769-01	HOLDER, P KNOB	
72	3-303-973-00	SPRING, COMPRESSION	
73	3-749-750-01	BUTTON, P LOCK	
74	3-749-751-01	BUTTON, POWER	
75	3-747-157-01	SHEET (T), PROTECTION	
76	3-749-768-01	DOOR, AUTO LOCK	
77	3-749-738-01	BUTTON, AUTO LOCK	
78	3-747-174-01	LID, BATTERY CASE, LITHIUM	
79	3-749-737-01	BUTTON, BATTERY RELEASE	
80	3-719-601-01	SCREW (B2X5), TAPPING	
81	3-669-480-21	+ PTPWH 2	
82	3-719-408-01	SCREW (B2), TAPPING, P3	
83	3-740-546-11	SCREW (M2X10.5)	
84	3-719-381-01	SCREW (M2X4)	
85	3-747-112-01	RING, TILT	
86	3-747-109-01	SLEEVE, EVF	
87	A-7019-263-A	EVF COMPLETE ASSY	88-95
88	A-7081-256-A	HOLDER BLOCK ASSY, FINDER	89
89	3-736-370-01	EYE CUP	
90	3-747-116-01	COVER, CRT	
91	3-713-790-31	SCREW (M2X8), TAPPING, P3	
92	X-3747-105-1	CABINET (L) ASSY, EVF	
93	*A-7062-400-A	VF-41 BOARD, COMPLETE	
94	⚠.1-452-566-11	CRT ASSY (M01KKX07WB10)	
95	3-747-149-01	CABINET (R), EVF	
96	3-940-060-01	COVER, TERMINAL BOARD	

5-3. MAIN BOARD BLOCK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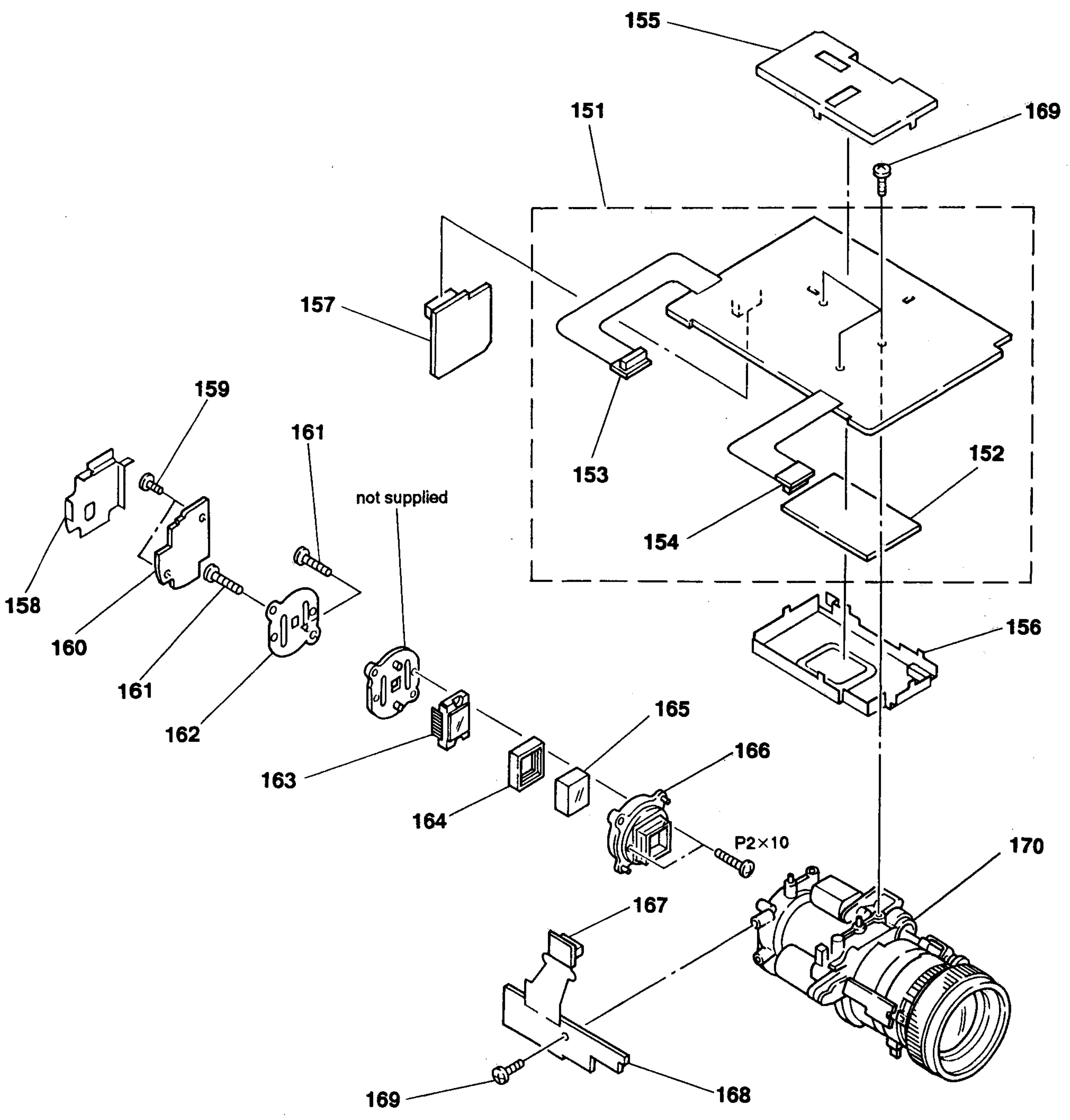
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

No.	Part No.	Description	Remark
101	A-7091-359-A	FRAME ASSY, U	102
102	3-713-786-51	SCREW (M2X3)	
103	3-940-054-01	CAP, AV	
104	3-749-774-01	PANEL, JK	
105	1-636-494-11	JK-67 BOARD	
106	1-590-103-11	CABLE, FLAT (FFC-9)	
107	3-749-741-01	KNOB, IN OUT	
108 ⚠	.1-537-309-11	TERMINAL BOARD (BATTERY) (J101)	
109 ⚠	.A-7062-399-A	DD-31 BOARD, COMPLETE (DC-DC CONVERTER UNIT)	
110	3-749-905-01	SCREW (FRAME), STEP	
111	3-165-803-01	SPRING, LEAF, GROUND	
112	1-572-496-11	SWITCH, PUSH	
113	*A-7071-268-A	FK-41 BOARD, COMPLETE	114
114	*3-749-906-01	INSULATOR, VTR BUTTON	
115	*A-7071-267-A	EJ-20 BOARD, COMPLETE	
116	3-749-780-01	PANEL, SUB	
117	*3-747-119-01	REINFORCEMENT, LCD	
118	X-3749-168-1	BRACKET (R) ASSY, MD	
119	*3-749-752-01	BRACKET, CAP STRAP	
120	3-736-396-02	SCREW, TRIPOD	
121	1-569-347-11	CONNECTOR, FPC (TRANSLATION) 13P	
122	1-636-498-11	FP-316 FLEXIBLE BOARD	
123	3-749-775-01	COVER, MD	
124	A-7062-396-A	AU-92 BOARD, COMPLETE	
125	1-636-496-11	FP-313 FLEXIBLE BOARD (W214)	
126	1-636-495-11	FP-312 FLEXIBLE BOARD (W213)	
127	A-7071-266-A	FP-314 BOARD, COMPLETE	
128	*A-7062-444-A	CC-52 BOARD, COMPLETE	125-127
129	A-7071-264-A	FP-363 BOARD, COMPLETE	
130	1-630-592-11	FP-184 FLEXIBLE BOARD (W604)	
131	A-7071-263-A	FP-355 BOARD, COMPLETE	
132	*3-736-318-01	PLATE, SHIELD, VC DELAY LINE	
133	*3-736-317-01	CASE (LOWER), RP SHIELD	
134	*3-736-316-01	CASE (UPPER), RP SHIELD	
135	*3-736-322-01	CASE, FE SHIELD	
136	A-7062-395-A	VS-63 BOARD, COMPLETE	129-135
137	3-713-786-51	SCREW (M2X3)	
138	3-719-408-01	SCREW (B2), TAPPING, P3	
139	3-732-791-01	SCREW (M2X3)	
140	3-704-197-21	SCREW (M1.4X2.5), LOCKING	
141	3-719-381-01	SCREW (M2X4)	
142	3-724-455-11	SCREW (M2X6)	
143	3-719-601-01	SCREW (B2X5), TAPPING	

5-4. CAMERA BLOCK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P2×10
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167
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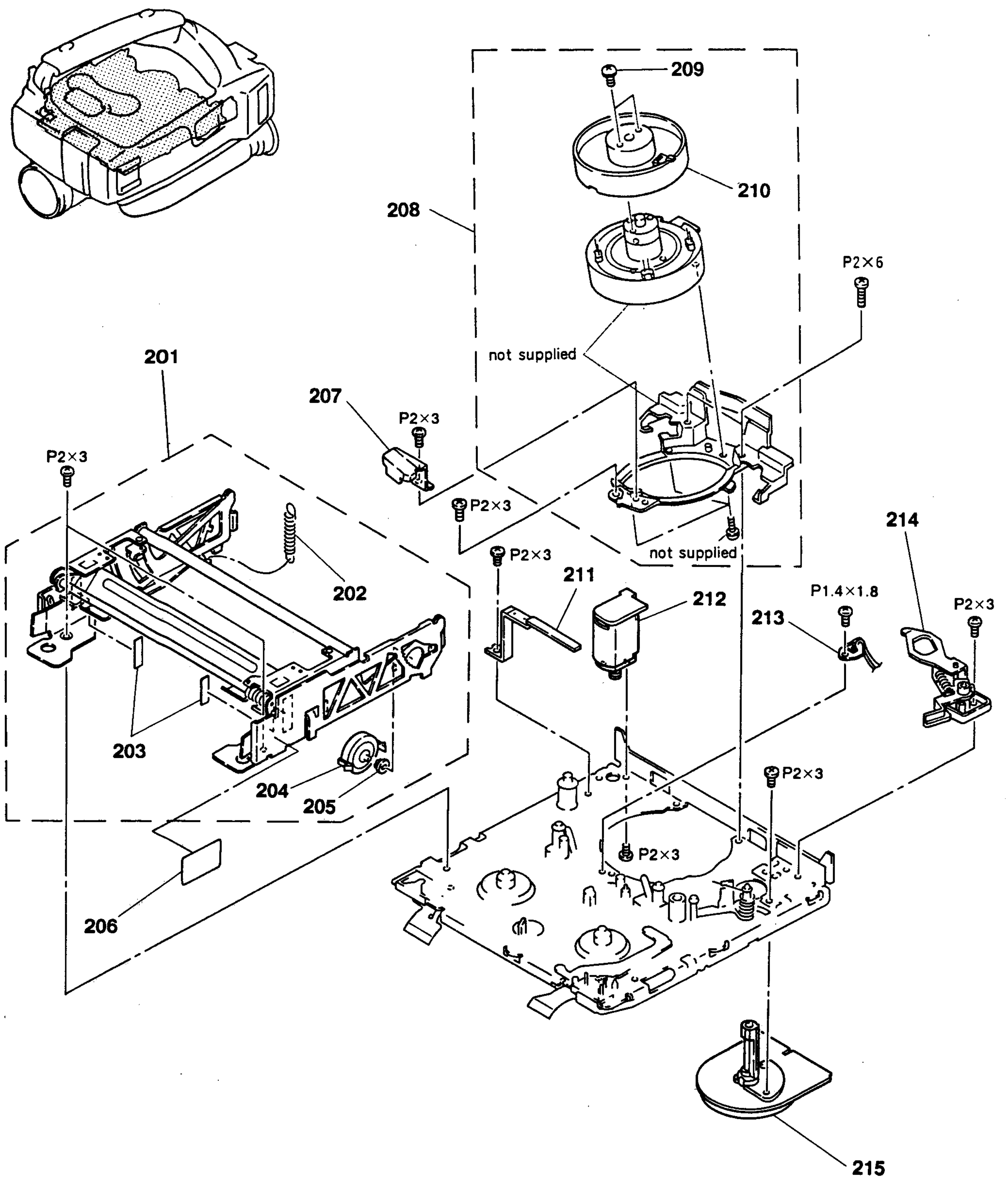
168

No.	Part No.	Description	Remark
151	A-7062-397-A	VC-81 BOARD, COMPLETE	152-154
152	A-7068-181-A	DT-77K BOARD, COMPLETE (HIC)	
153	A-7071-270-A	CB-33 BOARD, COMPLETE	
154	A-7071-269-A	CB-32 BOARD, COMPLETE	
155	*3-736-320-02	CASE (LOWER), VC SHIELD	
156	*3-747-166-01	CASE (UPPER), SHIELD, VC	
157	A-7062-415-A	TI-32 BOARD, COMPLETE	
158	*3-749-757-01	CASE, SHIELD, CCD	
159	3-713-786-51	SCREW (M2X3)	
160	A-7071-271-A	CD-50 BOARD, COMPLETE	
161	3-747-151-21	SCREW (2X12)	
162	*3-741-525-01	SHEET, INSULATING, CCD	
163	8-752-604-50	IC ICX044AK-1 (CCD IMAGER)	
164	3-749-739-01	RUBBER, SEAL	
165	1-547-445-11	FILTER BLOCK, OPTICAL	
166	3-749-760-01	ADAPTOR, CCD FITTING	
167	1-630-595-21	FP-187 FLEXIBLE BOARD (W701)	
168	A-7062-398-A	LD-38 BOARD, COMPLETE	
169	3-719-601-01	SCREW (B2X5), TAPPING	
170	1-547-461-11	LENS, ZOOM	

5-5. MD BLOCK ASSEMBLY (1)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P2×3
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P2×3
not supplied
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P2×3
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P2×3
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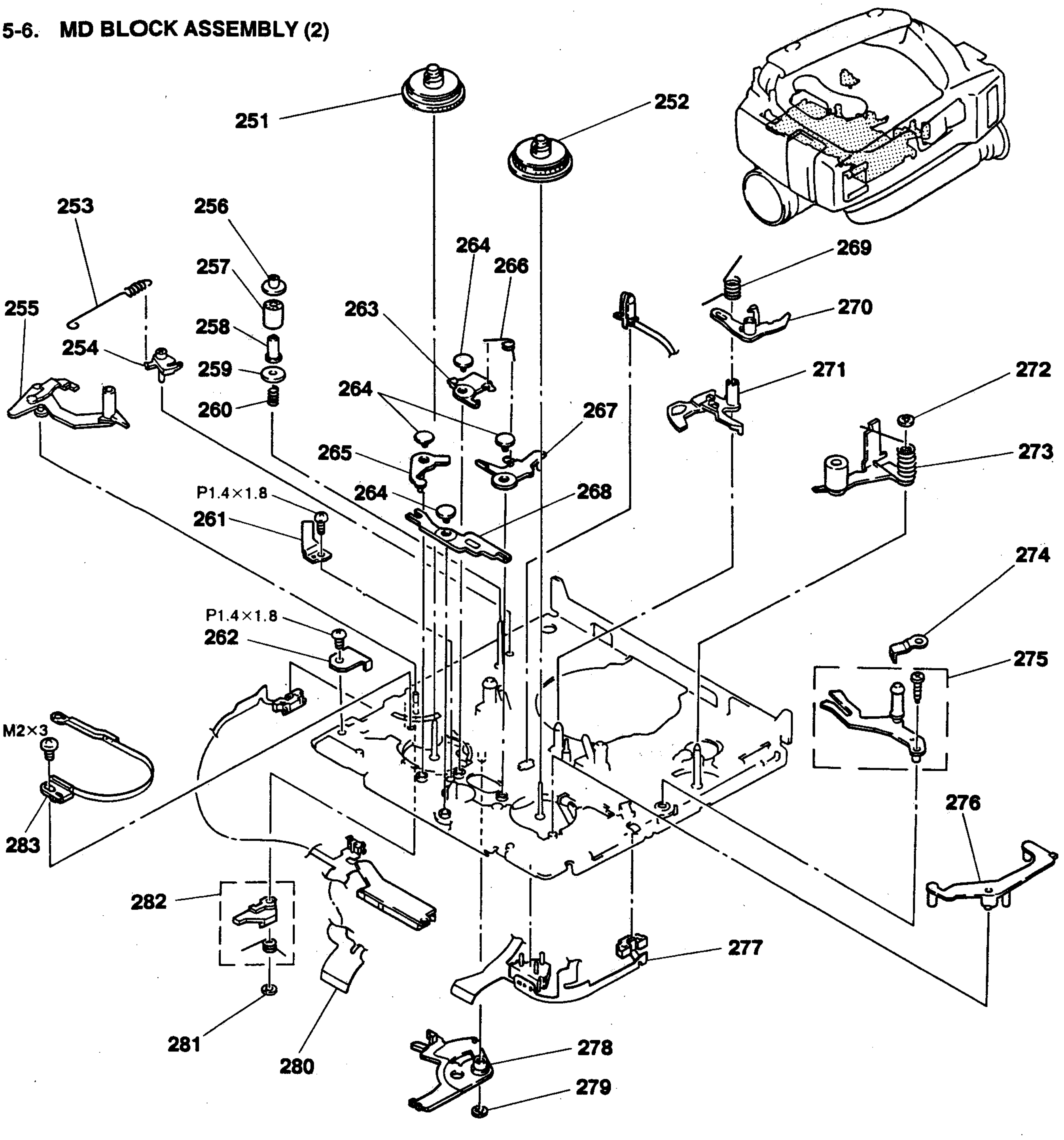
No.	Part No.	Description	Remark
201	X-3728-874-1	CASSETTE COMPARTMENT ASSY (N)	202-205
202	3-728-825-03	SPRING, TENSION	
203	*3-728-829-01	TAPE	
204	3-728-867-02	DAMPER, OIL	
205	3-739-806-02	GEAR (2), DAMPER	
206	*3-730-176-01	SHEET, MD	
207	3-728-868-01	GUARD, GUIDE	
208	A-7048-357-A	DRUM ASSY (DGU-57A-R)	209, 210
209	3-686-493-01	SCREW (M2X5), P1	
210	A-7049-307-A	DRUM ASSY, UPPER, ROTARY (DGR-57-R)	
211	X-3728-864-1	GROUND ASSY, SHAFT	
212	A-7040-208-A	MOTOR ASSY, THREADING (LOADING) (M903)	
213	1-808-505-12	SENSOR	
214	A-7040-207-A	ROLLER BLOCK ASSY, HC	
215	8-835-331-01	MOTOR, DC U-22A (CAPSTAN) (M902)	

5-6. MD BLOCK ASSEMBLY (2)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P1.4×1.8
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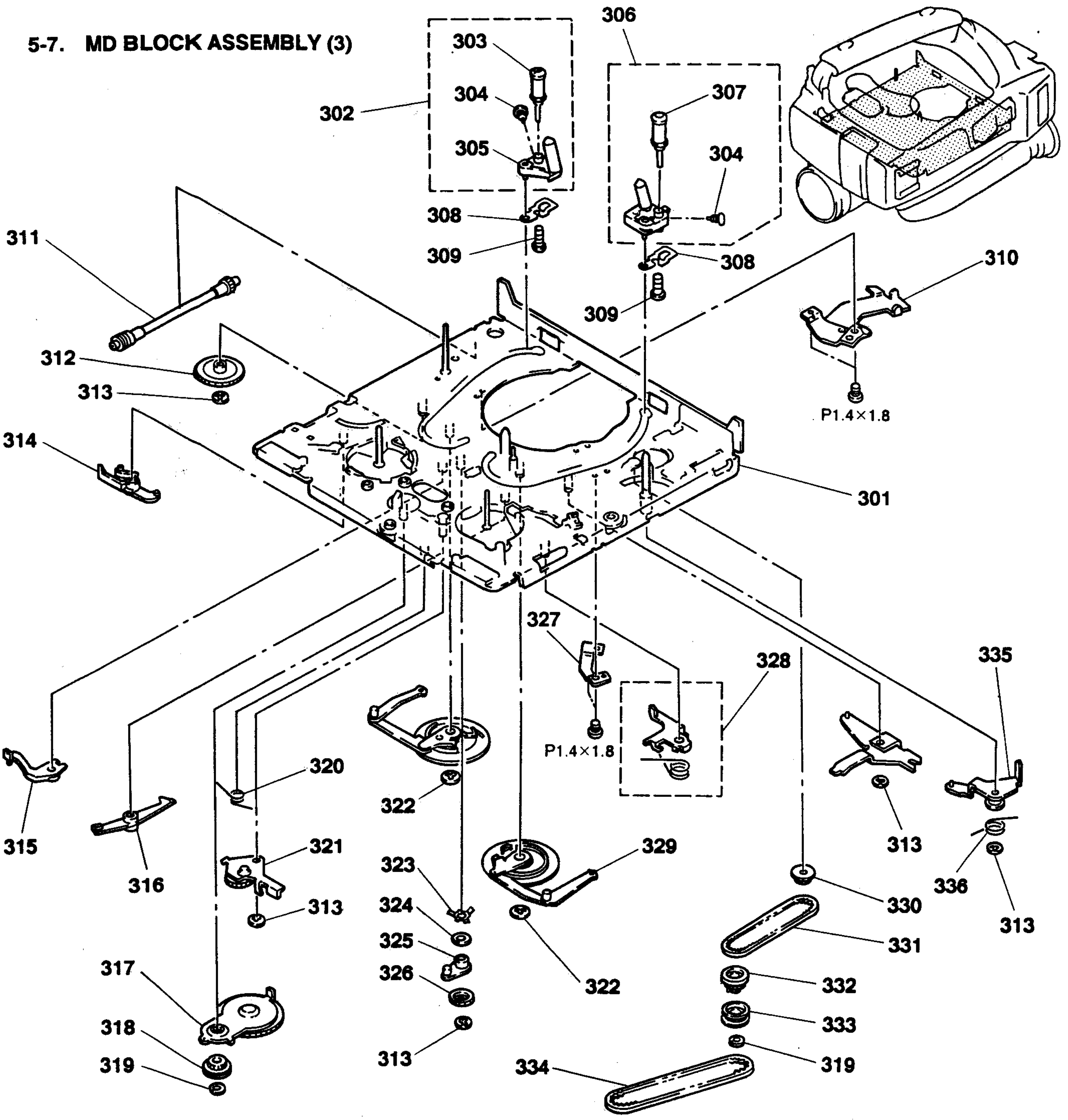
No.	Part No.	Description	Remark
251	X-3728-851-1	TABLE ASSY, REEL, S	
252	X-3728-855-1	TABLE ASSY, REEL, T	
253	3-736-414-01	SPRING, TENSION	
254	3-728-855-03	ARM, ADJUSTMENT	
255	X-3728-867-1	ARM ASSY (S), TENSION REGULATOR	
256	3-726-884-01	FLANGE, UPPER, TG2	
257	3-726-883-01	ROLLER, TG2	
258	3-726-885-01	SLEEVE, TG2	
259	3-726-882-02	FLANGE, LOWER, TG2	
260	3-726-886-01	SPRING, COMPRESSION	
261	3-726-848-01	RETAINER, TL	
262	3-730-125-01	RETAINER, SW	
263	3-728-849-01	BRAKE, S	
264	3-726-858-01	PIN, SHAFT RETAINER	
265	3-726-852-01	BRAKE, LB	
266	3-726-866-01	SPRING (ST), TORSION	
267	3-728-850-01	BRAKE, T	
268	3-726-853-01	LEVER, LB	
269	3-726-864-01	SPRING (RK), TORSION	
270	3-728-852-02	ARM, RK STOPPER	
271	3-728-875-01	STOPPER, RK	
272	3-669-465-00	WASHER (1.5), STOPPER	
273	A-7040-219-A	ARM BLOCK ASSY, PINCH	
274	3-728-808-01	SPRING, LEAF	
275	X-3728-869-1	ARM ASSY, TG7	
276	3-728-848-01	ARM, LB RELEASE	
277	1-628-061-12	FP-90 FLEXIBLE BOARD	
278	X-3728-863-1	LEVER ASSY, SW	
279	3-726-829-01	WASHER, STOPPER	
280	1-628-060-12	FP-89 FLEXIBLE BOARD	
281	3-321-393-11	WASHER, STOPPER	
282	X-3728-857-1	STOPPER ASSY, TENSION REGULATOR	
283	X-3728-859-1	BAND ASSY, TENSION REGULATOR	

5-7. MD BLOCK ASSEMBLY (3)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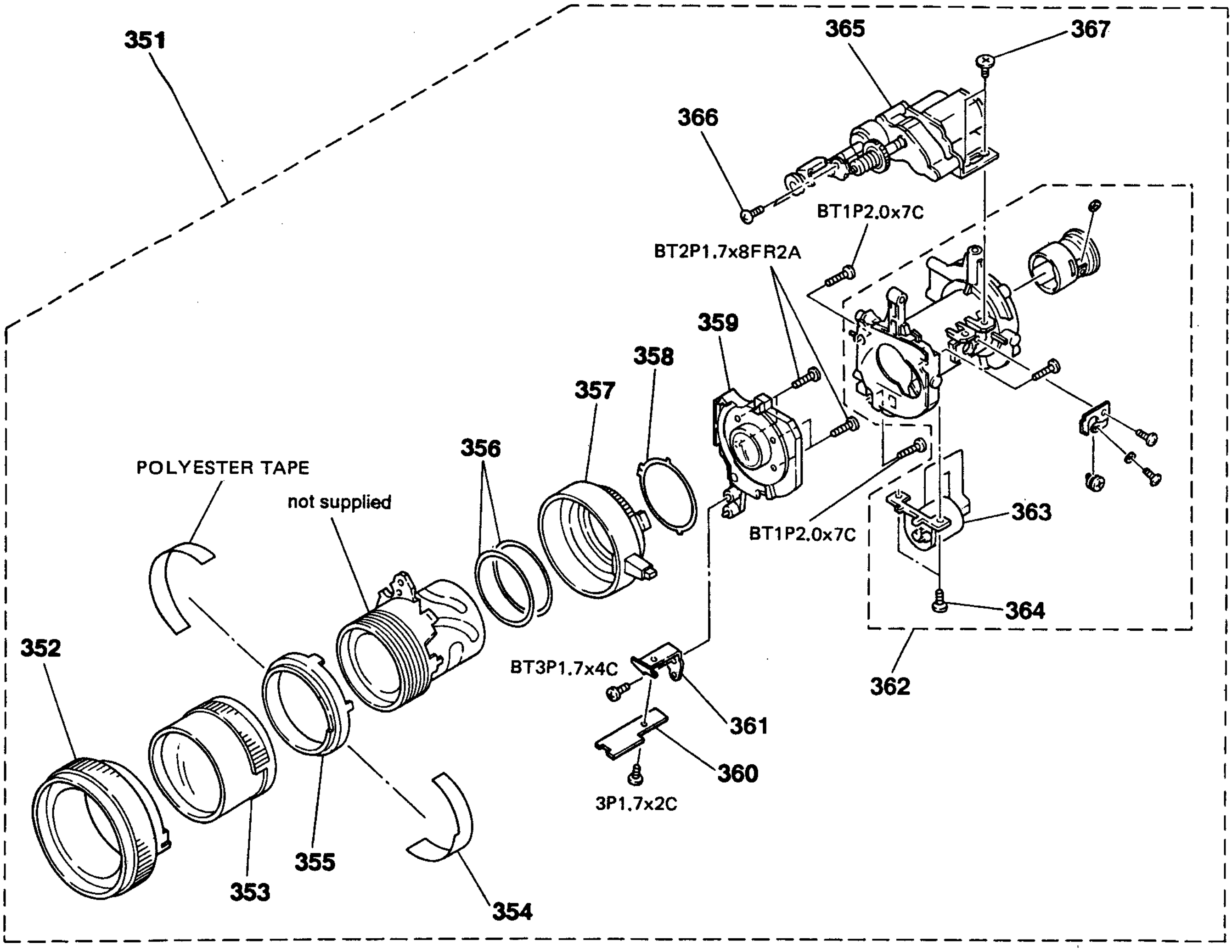
P1.4×1.8

No.	Part No.	Description	Remark
301	X-3728-862-1	CHASSIS ASSY, MECHANICAL	
302	A-7040-128-A	COASTER (LEFT) BLOCK ASSY	303-305
303	X-3726-820-1	ROLLER ASSY (U), GUIDE	
304	3-726-822-01	SCREW (M1.4X2) (STEP), HEAD	
305	X-3726-818-1	COASTER (LEFT) ASSY	
306	A-7040-216-A	COASTER (RIGHT) BLOCK ASSY (M1P)	304, 307
307	X-3728-810-1	ROLLER ASSY (U)(PLATING), GUIDE	
308	3-736-485-01	SPRING, LEAF, COSTER	
309	3-726-830-01	SCREW (M1.4X4) (THREE LOCK)	
310	X-3726-841-1	REINFORCEMENT (SS) ASSY	
311	X-3728-868-1	WORM ASSY	
312	3-744-109-01	GEAR, WHEEL	
313	3-726-829-01	WASHER, STOPPER	
314	3-728-842-01	LEVER, EJECT	
315	3-728-851-01	BRAKE, UL	
316	3-726-854-01	ARM, BRAKE RELEASE	
317	X-3728-866-1	GEAR ASSY, RK	
318	X-3728-858-1	GEAR ASSY, RC	
319	3-321-393-11	WASHER, STOPPER	
320	3-726-865-01	SPRING (LB), TORSION	
321	A-7040-225-A	GEAR BLOCK ASSY (N), LB	
322	3-669-465-00	WASHER (1.5), STOPPER	
323	3-726-867-01	SPRING, LEAF	
324	3-701-436-21	WASHER, POLYEHTHYLENE	
325	3-726-857-02	ARM, UL	
326	3-726-856-02	GEAR, UL	
327	*3-726-805-01	REINFORCEMENT (TT)	
328	X-3726-808-2	BRAKE ASSY, TS	
329	X-3728-843-1	GEAR (RIGHT) ASSY, DRIVE	
330	X-3726-805-1	GEAR ASSY, JOINT	
331	3-728-866-11	BELT (S), TIMING	
332	X-3726-838-1	PULLEY (UPPER) ASSY, MIDWAY	
333	3-741-196-01	PULLEY (LOWER), BELT MIDWAY	
334	3-741-197-01	BELT (L), TIMING	
335	X-3726-824-1	ARM ASSY, PINCH SUB	
336	3-726-895-01	SPRING	

5-8. ZOOM LENS ASSEMBLY


351
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BT1P2.0x7C
BT2P1.7x8FR2A
359
358
357
356
POLYESTER TAPE
not supplied
BT1P2.0x7C
363
364
362
352
BT3P1.7x4C
361
360
3P1.7x2C
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Ref.No.	Part No.	Description	Remark
351	1-547-461-11	LENS, ZOOM (VCL-708WA)	352-367
352	3-707-740-01	RING	
353	3-708-124-01	RING UNIT (F)	
354	3-708-123-01	SEAL, FITTING (DISTANCE SCALE)	
355	3-708-122-01	RING, (F) SCALE	
356	3-707-744-01	SPRING	
357	3-708-125-01	RING ASSY, ZOOM	
358	3-707-743-01	WASHER	
359	3-708-126-01	FRAME ASSY, MIDWAY	
360	3-708-128-01	SENSOR ASSY (F)	
361	3-708-129-01	BRACKET, FITTING (F SENSOR ASSY)	
362	3-708-127-01	MIRROR TUBE ASSY, REAR	363, 364
363	3-707-660-01	METER ASSY, EE	
364	3-707-665-01	SCREW, (B) 3P 1.7X4C	
365	3-707-659-01	MOTOR ASSY, AF/Z GEAR	
366	3-707-666-01	SCREW, (B) 3P 1.7X2.8C	
367	3-707-663-01	SCREW, FITTING	

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifé.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal Oxide-film resistor
  F : nonflammable
- –XX, –X mean standardized parts, so they may have some difference from the original one.
- SEMICONDUCTORS
  In each case, U : μ, for example:
  UA...: μA..., UPA...: μPA..., UPB...: μPB..., UPC...: μPC..., UPD...: μPD...
- CAPACITORS
  MF : μF, PF : μμF
- COILS
  MMH : mH, UH : μH

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description		Remark
	A-7062-395-A	VS-63 BOARD, COMPLETE (Ref.No 5,000 Series) **********************		
	*3-736-316-01	CASE (UPPER), RP SHIELD		
	*3-736-317-01	CASE (LOWER), RP SHIELD		
	*3-736-318-01	PLATE, SHIELD, VC DELAY LINE		
	*3-736-322-01	CASE, FE SHIELD		
		CAPACITOR		
C101	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C102	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C104	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C107	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C108	1-135-161-21	TANTAL. CHIP 22MF	20%	10V
C111	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C112	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C123	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C125	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C126	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C127	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C128	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C131	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C132	1-135-161-21	TANTAL. CHIP 22MF	20%	10V
C135	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C136	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C147	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C149	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C150	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C151	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C152	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C162	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C163	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C164	1-135-161-21	TANTAL. CHIP 22MF	20%	10V
C165	1-162-948-11	CERAMIC CHIP 39PF	5%	50V
C166	1-162-963-11	CERAMIC CHIP 680PF	10%	50V
C167	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C168	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C169	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C170	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C171	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C172	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C173	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C175	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C176	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C177	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C178	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C180	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C181	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C182	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C183	1-135-161-21	TANTAL. CHIP 22MF	20%	10V
C184	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C185	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C186	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C187	1-162-918-11	CERAMIC CHIP 18PF	5%	50V
C188	1-162-918-11	CERAMIC CHIP 18PF	5%	50V
C192	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C193	1-162-953-11	CERAMIC CHIP 100PF	5%	50V
C194	1-162-927-11	CERAMIC CHIP 100PF	5%	50V
C195	1-162-927-11	CERAMIC CHIP 100PF	5%	50V
C196	1-164-217-11	CERAMIC CHIP 150PF	0.25PF	50V
C201	1-135-145-11	TANTAL. CHIP 0.47MF	20%	35V
C202	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C203	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C204	1-126-205-11	ELECT CHIP 47MF	20%	6.3V
C205	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C206	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C207	1-126-246-11	ELECT CHIP 220MF	20%	4V
C208	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C209	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C210	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C211	1-135-149-21	TANTAL. CHIP 2.2MF	20%	10V
C212	1-135-146-21	TANTAL. CHIP 0.68MF	20%	25V
C213	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C214	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C215	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C216	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C217	1-135-145-11	TANTAL. CHIP 0.47MF	20%	35V
C218	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C219	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C220	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C221	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C222	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C223	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C224	1-162-638-11	CERAMIC CHIP 1MF		16V
C226	1-162-638-11	CERAMIC CHIP 1MF		16V
C228	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C229	1-162-638-11	CERAMIC CHIP 1MF		16V
C230	1-162-638-11	CERAMIC CHIP 1MF		16V
C231	1-162-638-11	CERAMIC CHIP 1MF		16V
C233	1-135-180-21	TANTAL. CHIP 3.3MF	20%	6.3V
C234	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C235	1-162-638-11	CERAMIC CHIP 1MF		16V
C236	1-162-638-11	CERAMIC CHIP 1MF		16V
C237	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C238	1-162-638-11	CERAMIC CHIP 1MF		16V
C239	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C240	1-162-944-11	CERAMIC CHIP 18PF	5%	50V
C241	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C242	1-135-180-21	TANTAL. CHIP 3.3MF	20%	6.3V
C243	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C244	1-162-638-11	CERAMIC CHIP 1MF		16V
C245	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C246	1-135-180-21	TANTAL. CHIP 3.3MF	20%	6.3V
C247	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C248	1-135-181-21	TANTAL. CHIP 4.7MF	20%	6.3V
C249	1-135-149-21	TANTAL. CHIP 2.2MF	20%	10V
C250	1-162-958-11	CERAMIC CHIP 270PF	5%	50V

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Ref.No	Part No.	Description		Remark
C251	1-162-953-11	CERAMIC CHIP 100PF	5%	50V
C253	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C254	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C255	1-164-227-11	CERAMIC CHIP 0.022MF	10%	25V
C256	1-162-953-11	CERAMIC CHIP 100PF	5%	50V
C257	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C258	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C259	1-162-926-11	CERAMIC CHIP 82PF	5%	50V
C261	1-163-137-00	CERAMIC CHIP 680PF	5%	50V
C262	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C263	1-163-141-00	CERAMIC CHIP 0.001MF	5%	50V
C264	1-162-955-11	CERAMIC CHIP 150PF	5%	50V
C265	1-162-946-11	CERAMIC CHIP 27PF	5%	50V
C266	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C267	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C268	1-163-131-00	CERAMIC CHIP 390PF	5%	50V
C269	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C270	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C271	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C272	1-135-180-21	TANTAL. CHIP 3.3MF	20%	6.3V
C273	1-162-941-11	CERAMIC CHIP 10PF	0.5PF	50V
C274	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C275	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C276	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C277	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C278	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C279	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C280	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C281	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C282	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C283	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C284	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C285	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C287	1-162-951-11	CERAMIC CHIP 68PF	5%	50V
C288	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C289	1-135-161-21	TANTAL. CHIP 22MF	20%	10V
C290	1-162-959-11	CERAMIC CHIP 330PF	5%	50V
C291	1-162-638-11	CERAMIC CHIP 1MF		16V
C293	1-135-161-21	TANTAL. CHIP 22MF	20%	10V
C294	1-135-145-11	TANTAL. CHIP 0.47MF	20%	35V
C295	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C296	1-162-946-11	CERAMIC CHIP 27PF	5%	50V
C297	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C298	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C299	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C300	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C301	1-162-945-11	CERAMIC CHIP 22PF	5%	50V
C302	1-135-162-21	TANTAL. CHIP 33MF	20%	6.3V
C303	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C304	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C305	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C306	1-163-986-00	CERAMIC CHIP 0.027MF	10%	25V
C307	1-162-951-11	CERAMIC CHIP 68PF	5%	50V

Ref.No	Part No.	Description		Remark
C308	1-162-966-11	CERAMIC CHIP 0.0022MF	10%	50V
C309	1-162-947-11	CERAMIC CHIP 33PF	5%	50V
C310	1-162-955-11	CERAMIC CHIP 150PF	5%	50V
C312	1-162-949-11	CERAMIC CHIP 47PF	5%	50V
C313	1-162-962-11	CERAMIC CHIP 470PF	10%	50V
C314	1-135-161-21	TANTAL. CHIP 22MF	20%	10V
C315	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C316	1-162-948-11	CERAMIC CHIP 39PF	5%	50V
C317	1-162-943-11	CERAMIC CHIP 15PF	5%	50V
C318	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C319	1-162-949-11	CERAMIC CHIP 47PF	5%	50V
C320	1-162-956-11	CERAMIC CHIP 180PF	5%	50V
C321	1-162-953-11	CERAMIC CHIP 100PF	5%	50V
C322	1-162-949-11	CERAMIC CHIP 47PF	5%	50V
C323	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C324	1-162-952-11	CERAMIC CHIP 82PF	5%	50V
C325	1-162-967-11	CERAMIC CHIP 0.0033MF	10%	50V
C326	1-126-205-11	ELECT CHIP 47MF	20%	6.3V
C327	1-162-943-11	CERAMIC CHIP 15PF	5%	50V
C328	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C331	1-162-958-11	CERAMIC CHIP 270PF	5%	50V
C334	1-164-227-11	CERAMIC CHIP 0.022MF	10%	25V
C335	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C336	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C337	1-162-942-11	CERAMIC CHIP 12PF	5%	50V
C338	1-164-227-11	CERAMIC CHIP 0.022MF	10%	25V
C339	1-162-945-11	CERAMIC CHIP 22PF	5%	50V
C340	1-162-945-11	CERAMIC CHIP 22PF	5%	50V
C356	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C357	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C366	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C501	1-130-495-00	MYLAR 0.1MF	5%	50V
C502	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C503	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C504	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C505	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C506	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C507	1-162-967-11	CERAMIC CHIP 0.0033MF	10%	50V
C508	1-162-967-11	CERAMIC CHIP 0.0033MF	10%	50V
C509	1-162-967-11	CERAMIC CHIP 0.0033MF	10%	50V
C511	1-162-968-11	CERAMIC CHIP 0.0047MF	10%	50V
C512	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C513	1-124-779-00	ELECT CHIP 10MF	20%	16V
C514	1-135-180-21	TANTAL. CHIP 3.3MF	20%	6.3V
C515	1-135-149-21	TANTAL. CHIP 2.2MF	20%	10V
C518	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C519	1-162-969-11	CERAMIC CHIP 0.0068MF	10%	25V
C520	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C521	1-162-638-11	CERAMIC CHIP 1MF		16V
C522	1-124-779-00	ELECT CHIP 10MF	20%	16V
C523	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C524	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C525	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description		Remark
C530	1-164-330-21	CERAMIC CHIP 0.22MF	10%	16V
C531	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C532	1-164-330-21	CERAMIC CHIP 0.22MF	10%	16V
C542	1-162-968-11	CERAMIC CHIP 0.0047MF	10%	50V
C543	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C544	1-162-967-11	CERAMIC CHIP 0.0033MF	10%	50V
C546	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C547	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C548	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C549	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C550	1-162-638-11	CERAMIC CHIP 1MF		16V
C551	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C552	1-164-227-11	CERAMIC CHIP 0.022MF	10%	25V
C553	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C554	1-164-227-11	CERAMIC CHIP 0.022MF	10%	25V
C555	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C556	1-162-638-11	CERAMIC CHIP 1MF		16V
C557	1-162-638-11	CERAMIC CHIP 1MF		16V
C558	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C559	1-162-921-11	CERAMIC CHIP 33PF	5%	50V
C560	1-162-921-11	CERAMIC CHIP 33PF	5%	50V
C561	1-162-638-11	CERAMIC CHIP 1MF		16V
C562	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C563	1-163-141-00	CERAMIC CHIP 0.001MF	5%	50V
C564	1-162-949-11	CERAMIC CHIP 47PF	5%	50V
C565	1-163-145-00	CERAMIC CHIP 0.0015MF	5%	50V
C566	1-162-945-11	CERAMIC CHIP 22PF	5%	50V
C567	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C571	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C572	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C573	1-164-634-11	CERAMIC CHIP 1MF		16V
C601	1-162-916-11	CERAMIC CHIP 12PF	5%	50V
C602	1-162-916-11	CERAMIC CHIP 12PF	5%	50V
C603	1-162-968-11	CERAMIC CHIP 0.0047MF	10%	50V
C604	1-135-177-21	TANTAL. CHIP 1MF	20%	20V
C606	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C607	1-124-443-00	ELECT 100MF	20%	10V
C608	1-135-180-21	TANTAL. CHIP 3.3MF	20%	6.3V
C609	1-162-638-11	CERAMIC CHIP 1MF		16V
C610	1-162-638-11	CERAMIC CHIP 1MF		16V
C611	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C612	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C613	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C614	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C615	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C616	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C618	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C620	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C661	1-162-966-11	CERAMIC CHIP 0.0022MF		50V
C662	1-163-023-00	CERAMIC CHIP 0.015MF		50V
C663	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C664	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C665	1-162-974-11	CERAMIC CHIP 0.01MF		50V

Ref.No	Part No.	Description		Remark
C666	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C667	1-163-081-00	CERAMIC CHIP 0.22MF		25V
C668	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C669	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C681	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V

CONNECTOR

CN2	1-568-329-11	CONNECTOR, BOARD TO BOARD 17P
CN101	1-566-531-11	CONNECTOR, FPC (ZIF) 15P
CN201	1-566-542-31	CONNECTOR, FPC (NON ZIF) 10P
CN202	1-568-342-41	CONNECTOR, BOARD TO BOARD 7P
CN203	1-568-333-11	CONNECTOR, BOARD TO BOARD 14P
CN204	1-568-364-41	CONNECTOR, BOARD TO BOARD 12P
CN205	*1-565-876-11	PIN, CONNECTOR (PC BOARD) 4P
CN501	1-566-541-11	CONNECTOR, FPC (NON ZIF) 9P
CN502	1-562-880-11	CONNECTOR, CARD EDGE 15P
CN601	1-566-538-11	CONNECTOR, FPC (NON ZIF) 6P
CN602	1-566-546-11	CONNECTOR, FPC (NON ZIF) 14P
CN603	1-568-367-41	CONNECTOR, BOARD TO BOARD 18P
CN604	1-568-334-11	CONNECTOR, BOARD TO BOARD 16P
CN607	1-565-527-11	PIN, CONNECTOR (PC BOARD) 2P

DIODE

D210	8-719-404-35	DIODE MA141WK
D211	8-719-118-21	DIODE 1SS283
D215	8-719-800-76	DIODE 1SS226
D216	8-719-404-35	DIODE MA141WK
D217	8-719-404-46	DIODE MA110
D218	8-719-404-46	DIODE MA110
D501	8-719-404-46	DIODE MA110
D601	8-719-404-40	DIODE MA121
D602	8-719-404-40	DIODE MA121
D603	8-719-404-40	DIODE MA121
D604	8-719-404-40	DIODE MA121
D605	8-719-404-46	DIODE MA110
D606	8-719-404-46	DIODE MA110

FILTER

FL201	1-236-146-11	FILTER, BAND PASS
FL202	1-409-439-11	FILTER, TRAP
FL203	1-567-727-11	FILTER, CERAMIC

IC

IC101	8-752-033-38	IC CXA1202R
IC102	8-752-033-38	IC CXA1202R
IC201	8-752-033-40	IC CXA1201Q
IC202	8-752-323-46	IC CXL1501M
IC203	8-752-034-40	IC CXA1200BQ
IC205	8-759-009-22	IC MC14094BF
IC501	8-759-990-55	IC CXA8006M
IC502	8-759-148-05	IC CXA8010M
IC504	8-759-805-06	IC CXA1127M
IC505	8-752-035-48	IC CXA1204Q

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description	Remark
IC601	8-752-815-20	IC CXP80116-697Q	
IC602	8-759-502-36	IC S-81350HG	
IC603	8-759-987-66	IC TL7757CPK-E1	
IC604	8-759-103-94	IC UPC324G2-T1	
IC607	8-759-103-81	IC UPC393G2-T1	
		COIL	
L101	1-412-033-11	INDUCTOR CHIP 220UH	
L102	1-410-385-11	INDUCTOR CHIP 22UH	
L103	1-412-033-11	INDUCTOR CHIP 220UH	
L104	1-410-385-11	INDUCTOR CHIP 22UH	
L161	1-412-029-11	INDUCTOR CHIP 10UH	
L162	1-412-029-11	INDUCTOR CHIP 10UH	
L191	1-412-033-11	INDUCTOR CHIP 220UH	
L192	1-410-381-11	INDUCTOR CHIP 10UH	
L201	1-410-393-11	INDUCTOR CHIP 100UH	
L202	1-410-393-11	INDUCTOR CHIP 100UH	
L203	1-412-031-11	INDUCTOR CHIP 47UH	
L204	1-412-031-11	INDUCTOR CHIP 47UH	
L205	1-410-388-21	INDUCTOR CHIP 39UH	
L206	1-410-383-31	INDUCTOR CHIP 15UH	
L208	1-410-392-11	INDUCTOR CHIP 82UH	
L209	1-410-385-11	INDUCTOR CHIP 22UH	
L210	1-412-029-11	INDUCTOR CHIP 10UH	
L211	1-410-392-11	INDUCTOR CHIP 82UH	
L212	1-410-393-11	INDUCTOR CHIP 100UH	
L213	1-410-377-31	INDUCTOR CHIP 4.7UH	
L214	1-408-797-11	INDUCTOR CHIP 470UH	
L215	1-408-795-21	INDUCTOR CHIP 330UH	
L216	1-410-388-21	INDUCTOR CHIP 39UH	
L217	1-408-795-21	INDUCTOR CHIP 330UH	
L218	1-410-393-11	INDUCTOR CHIP 100UH	
L219	1-410-380-31	INDUCTOR CHIP 8.2UH	
L220	1-408-795-21	INDUCTOR CHIP 330UH	
L221	1-410-393-11	INDUCTOR CHIP 100UH	
L222	1-410-393-11	INDUCTOR CHIP 100UH	
L223	1-408-791-00	INDUCTOR CHIP 150UH	
L224	1-410-657-21	INDUCTOR CHIP 180UH	
L225	1-410-387-11	INDUCTOR CHIP 33UH	
L227	1-410-381-11	INDUCTOR CHIP 10UH	
L228	1-412-029-11	INDUCTOR CHIP 10UH	
L229	1-410-393-11	INDUCTOR CHIP 100UH	
L241	1-410-369-11	INDUCTOR CHIP 1UH	
L502	1-408-795-21	INDUCTOR CHIP 330UH	
L503	1-412-032-11	INDUCTOR CHIP 100UH	
L504	1-412-032-11	INDUCTOR CHIP 100UH	
L601	1-412-031-11	INDUCTOR CHIP 47UH	
L602	1-412-031-11	INDUCTOR CHIP 47UH	
		IC LINK	
PS601⚠	1-532-605-00	LINK, IC	
PS602⚠	1-532-685-00	LINK, IC	

Ref.No	Part No.	Description	Remark
		TRANSISTOR	
Q161	8-729-403-35	TRANSISTOR UN5113	
Q162	8-729-602-21	TRANSISTOR 2SC4154	
Q166	8-729-905-18	TRANSISTOR DTC144EU	
Q191	8-729-117-16	TRANSISTOR 2SA1611	
Q192	8-729-117-16	TRANSISTOR 2SA1611	
Q193	8-729-216-22	TRANSISTOR 2SA1162	
Q201	8-729-101-07	TRANSISTOR 2SB798-DL	
Q202	8-729-602-21	TRANSISTOR 2SC4154	
Q203	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q204	8-729-905-18	TRANSISTOR DTC144EU	
Q205	8-729-140-67	TRANSISTOR 2SC4177	
Q206	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q207	8-729-140-88	TRANSISTOR FP1A3M	
Q208	8-729-122-63	TRANSISTOR 2SA1226	
Q209	8-729-420-12	TRANSISTOR XN4213	
Q210	8-729-421-98	TRANSISTOR 2SC2404	
Q211	8-729-402-78	TRANSISTOR XN6401	
Q212	8-729-602-21	TRANSISTOR 2SC4154TP	
Q213	8-729-271-23	TRANSISTOR 2SC2812	
Q214	8-729-271-23	TRANSISTOR 2SC2812	
Q215	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q216	8-729-117-32	TRANSISTOR 2SC4177	
Q217	8-729-117-32	TRANSISTOR 2SC4177	
Q218	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q219	8-729-905-23	TRANSISTOR 2SA1576R	
Q220	8-729-117-32	TRANSISTOR 2SC4177	
Q221	8-729-402-42	TRANSISTOR UN5213	
Q222	8-729-402-78	TRANSISTOR XN6401	
Q223	8-729-905-61	TRANSISTOR DTC124EUT	
Q224	8-729-403-35	TRANSISTOR UN5113	
Q226	8-729-807-87	TRANSISTOR 2SB1295	
Q227	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q228	8-729-117-32	TRANSISTOR 2SC4177	
Q229	8-729-907-00	TRANSISTOR DTC114EU	
Q230	8-729-117-32	TRANSISTOR 2SC4177	
Q231	8-729-905-15	TRANSISTOR DTC144WU	
Q232	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q233	8-729-117-32	TRANSISTOR 2SC4177	
Q234	8-729-140-67	TRANSISTOR 2SC4177	
Q235	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q236	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q237	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q238	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q239	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q240	8-729-403-35	TRANSISTOR UN5113	
Q241	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q242	8-729-402-42	TRANSISTOR UN5213	
Q244	8-729-921-58	TRANSISTOR DTA144TU-T106	
Q245	8-729-102-07	TRANSISTOR 2SC223-F13	
Q246	8-729-117-32	TRANSISTOR 2SC4177	
Q247	8-729-403-35	TRANSISTOR UN5113	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifé.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
Q248	8-729-403-35	TRANSISTOR UN5113	
Q249	8-729-420-12	TRANSISTOR XN4213	
Q256	8-729-402-42	TRANSISTOR UN5213	
Q501	8-729-822-48	TRANSISTOR FC101	
Q541	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q542	8-729-140-67	TRANSISTOR 2SC4177	
Q543	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q571	8-729-822-48	TRANSISTOR FC101	
Q572	8-729-822-48	TRANSISTOR FC101	
Q573	8-729-117-32	TRANSISTOR 2SC4177	
Q601	8-729-403-24	TRANSISTOR XN4210	
Q602	8-729-403-24	TRANSISTOR XN4210	
Q603	8-729-403-24	TRANSISTOR XN4210	
Q604	8-729-403-24	TRANSISTOR XN4210	
Q606	8-729-403-24	TRANSISTOR XN4210	
Q607	8-729-403-24	TRANSISTOR XN4210	
Q608	8-729-403-24	TRANSISTOR XN4210	
Q609	8-729-403-24	TRANSISTOR XN4210	
Q610	8-729-403-24	TRANSISTOR XN4210	
Q611	8-729-420-12	TRANSISTOR XN4213	
Q612	8-729-403-35	TRANSISTOR UN5113	
Q613	8-729-402-42	TRANSISTOR UN5213	
Q614	8-729-903-97	TRANSISTOR FMS1FE	
Q615	8-729-903-82	TRANSISTOR FMW2	
Q616	8-729-117-32	TRANSISTOR 2SC4177	
Q617	8-729-903-10	TRANSISTOR FMW1	
Q618	8-729-903-10	TRANSISTOR FMW1	
Q619	8-729-907-00	TRANSISTOR DTC114EU	
Q620	8-729-421-90	TRANSISTOR XN4113	
Q621	8-729-420-12	TRANSISTOR XN4213	
Q623	8-729-140-67	TRANSISTOR 2SC4177	
Q643	8-729-403-24	TRANSISTOR XN4210	
Q644	8-729-403-35	TRANSISTOR UN5113	
Q645	8-729-402-42	TRANSISTOR UN5213	
Q661	8-729-140-67	TRANSISTOR 2SC4177	
Q662	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q663	8-729-140-67	TRANSISTOR 2SC4177	
Q664	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q665	8-729-140-67	TRANSISTOR 2SC4177	
Q681	8-729-140-67	TRANSISTOR 2SC4177	
Q682	8-729-822-85	TRANSISTOR 2SB1202FAST-TL	

RESISTOR

Ref.No	Part No.	Description				Remark
R101	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R105	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R106	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R108	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R110	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R111	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R116	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R118	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R120	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R121	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R122	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R126	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R127	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R128	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R129	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R143	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R144	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R162	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R163	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R164	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R165	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R166	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R167	1-216-843-11	METAL GLAZE	68K	5%	1/16W	
R168	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W	
R170	1-216-847-11	METAL GLAZE	150K	5%	1/16W	
R171	1-216-847-11	METAL GLAZE	150K	5%	1/16W	
R172	1-216-847-11	METAL GLAZE	150K	5%	1/16W	
R173	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W	
R174	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R175	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R176	1-216-791-11	METAL GLAZE	3.3	5%	1/16W	
R177	1-216-791-11	METAL GLAZE	3.3	5%	1/16W	
R191	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R192	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R193	1-216-814-11	METAL GLAZE	270	5%	1/16W	
R194	1-216-813-11	METAL GLAZE	220	5%	1/16W	
R195	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R196	1-216-803-11	METAL GLAZE	33	5%	1/16W	
R197	1-216-806-11	METAL GLAZE	56	5%	1/16W	
R198	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R199	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R201	1-216-804-11	METAL GLAZE	39	5%	1/16W	
R202	1-216-804-11	METAL GLAZE	39	5%	1/16W	
R203	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R204	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R205	1-216-791-11	METAL GLAZE	3.3	5%	1/16W	
R206	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	
R207	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R208	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R209	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R210	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R211	1-218-285-11	METAL GLAZE	75	5%	1/16W	
R213	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R214	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W	
R215	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R216	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R217	1-216-699-11	METAL CHIP	100K	0.50%	1/10W	
R218	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R219	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R220	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R221	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R222	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R223	1-216-841-11	METAL GLAZE	47K	5%	1/16W	

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description				Remark
R224	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R225	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R226	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	
R227	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R228	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R229	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R231	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R232	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R233	1-216-844-11	METAL GLAZE	82K	5%	1/16W	
R234	1-216-810-11	METAL GLAZE	120	5%	1/16W	
R235	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R236	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R237	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R238	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R239	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R240	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R241	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R242	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R243	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R244	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R245	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R246	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R247	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R248	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R249	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R250	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R251	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R252	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R253	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W	
R254	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R255	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R256	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R258	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R259	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R260	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R261	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R262	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R263	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R264	1-216-807-11	METAL GLAZE	68	5%	1/16W	
R265	1-216-811-11	METAL GLAZE	150	5%	1/16W	
R266	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R267	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R268	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R269	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	
R270	1-216-643-11	METAL CHIP	470	0.50%	1/10W	
R271	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R272	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W	
R273	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R274	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R275	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R276	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R277	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R278	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	

Ref.No	Part No.	Description				Remark
R279	1-216-834-11	METAL GLAZE	12K	5%	1/16W	
R280	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R281	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R282	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R283	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R284	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R285	1-216-814-11	METAL GLAZE	270	5%	1/16W	
R286	1-216-666-11	METAL CHIP	4.3K	0.50%	1/10W	
R287	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R288	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R289	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R290	1-216-843-11	METAL GLAZE	68K	5%	1/16W	
R291	1-216-855-11	METAL GLAZE	680K	5%	1/16W	
R293	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R294	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R295	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R296	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R297	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R298	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R299	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R300	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R301	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R304	1-216-807-11	METAL GLAZE	68	5%	1/16W	
R311	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R316	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R317	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R318	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R319	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R320	1-216-815-11	METAL GLAZE	330	5%	1/16W	
R321	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R325	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R326	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W	
R327	1-216-813-11	METAL GLAZE	220	5%	1/16W	
R328	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R329	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R330	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R331	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R332	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R333	1-216-809-11	METAL GLAZE	100	5%	1/16W	
R334	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R338	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R339	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R341	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	
R342	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R343	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R345	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R351	1-216-810-11	METAL GLAZE	120	5%	1/16W	
R352	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R355	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R356	1-216-807-11	METAL GLAZE	68	5%	1/16W	
R357	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R358	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W	
R360	1-216-821-11	METAL GLAZE	1K	5%	1/16W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R361	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R362	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R363	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R364	1-216-816-11	METAL GLAZE	390	5%	1/16W	
R367	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R370	1-216-296-00	METAL GLAZE	0	5%	1/8W	
R371	1-216-296-00	METAL GLAZE	0	5%	1/8W	
R372	1-216-296-00	METAL GLAZE	0	5%	1/8W	
R380	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R382	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R399	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R501	1-216-336-11	METAL GLAZE	47K	1%	1/10W	
R502	1-216-336-11	METAL GLAZE	47K	1%	1/10W	
R503	1-218-162-11	METAL GLAZE	82K	1%	1/10W	
R504	1-216-699-11	METAL CHIP	100K	0.50%	1/10W	
R505	1-216-661-11	METAL CHIP	2.7K	0.50%	1/10W	
R506	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R507	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R508	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R509	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R510	1-216-843-11	METAL GLAZE	68K	5%	1/16W	
R511	1-216-815-11	METAL GLAZE	330	5%	1/16W	
R512	1-217-671-11	METAL GLAZE	1	5%	1/10W	
R513	1-217-671-11	METAL GLAZE	1	5%	1/10W	
R514	1-217-671-11	METAL GLAZE	1	5%	1/10W	
R515	1-217-671-11	METAL GLAZE	1	5%	1/10W	
R521	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R522	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R526	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R527	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R528	1-216-789-11	METAL GLAZE	2.2	5%	1/16W	
R529	1-216-789-11	METAL GLAZE	2.2	5%	1/16W	
R530	1-216-789-11	METAL GLAZE	2.2	5%	1/16W	
R531	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R532	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R533	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R536	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R543	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R544	1-216-814-11	METAL GLAZE	270	5%	1/16W	
R545	1-216-812-11	METAL GLAZE	180	5%	1/16W	
R547	1-216-850-11	METAL GLAZE	270K	5%	1/16W	
R548	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R549	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R550	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R551	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R552	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R553	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R554	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R555	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R556	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R557	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R558	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R559	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	

Ref.No	Part No.	Description				Remark
R560	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R571	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R572	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R573	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R574	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R575	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R576	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R577	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R580	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R590	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R591	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R592	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R593	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R594	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R595	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R596	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R597	1-216-847-11	METAL GLAZE	150K	5%	1/16W	
R599	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R602	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R604	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R605	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R610	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R611	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R612	1-216-852-11	METAL GLAZE	390K	5%	1/16W	
R613	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R614	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R615	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R616	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R617	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R618	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R619	1-216-844-11	METAL GLAZE	82K	5%	1/16W	
R620	1-216-844-11	METAL GLAZE	82K	5%	1/16W	
R621	1-216-844-11	METAL GLAZE	82K	5%	1/16W	
R622	1-216-844-11	METAL GLAZE	82K	5%	1/16W	
R625	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R626	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R627	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R630	1-216-296-00	METAL GLAZE	0	5%	1/8W	
R631	1-216-296-00	METAL GLAZE	0	5%	1/8W	
R633	1-216-176-00	METAL GLAZE	120	5%	1/8W	
R634	1-216-174-00	METAL GLAZE	100	5%	1/8W	
R635	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R645	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R646	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R647	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R648	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R661	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R662	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R663	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R664	1-216-807-11	METAL GLAZE	68	5%	1/16W	
R665	1-216-811-11	METAL GLAZE	150	5%	1/16W	
R666	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R667	1-216-844-11	METAL GLAZE	82K	5%	1/16W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
R668	1-216-857-11	METAL GLAZE 1M 5% 1/16W	
R669	1-216-838-11	METAL GLAZE 27K 5% 1/16W	
R670	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R671	1-216-838-11	METAL GLAZE 27K 5% 1/16W	
R672	1-216-859-11	METAL GLAZE 1.5M 5% 1/16W	
R673	1-216-851-11	METAL GLAZE 330K 5% 1/16W	
R674	1-216-851-11	METAL GLAZE 330K 5% 1/16W	
R675	1-216-857-11	METAL GLAZE 1M 5% 1/16W	
R678	1-216-847-11	METAL GLAZE 150K 5% 1/16W	
R679	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R681	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R682	1-216-820-11	METAL GLAZE 820 5% 1/16W	
R683	1-216-194-00	METAL GLAZE 680 5% 1/8W	
R684	1-216-194-00	METAL GLAZE 680 5% 1/8W	
R685	1-216-194-00	METAL GLAZE 680 5% 1/8W	
R686	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
		NETWORK RESISTOR	
RB201	1-236-424-11	NETWORK, RES 10K	
RB212	1-236-424-11	NETWORK, RES 10K	
RB213	1-236-412-11	NETWORK, RES 1.0K	
RB214	1-236-408-11	NETWORK, RES 470	
RB216	1-236-409-11	NETWORK, RES 560	
RB502	1-236-424-11	NETWORK, RES 10K	
RB541	1-236-408-11	NETWORK, RES 470	
RB542	1-236-418-11	NETWORK, RES 3.3K	
RB543	1-236-418-11	NETWORK, RES 3.3K	
RB601	1-236-436-11	NETWORK, RES 100K	
RB602	1-236-436-11	NETWORK, RES 100K	
RB603	1-236-436-11	NETWORK, RES 100K	
RB604	1-236-436-11	NETWORK, RES 100K	
RB605	1-236-436-11	NETWORK, RES 100K	
RB606	1-236-436-11	NETWORK, RES 100K	
RB607	1-236-436-11	NETWORK, RES 100K	
RB608	1-236-436-11	NETWORK, RES 100K	
RB609	1-236-436-11	NETWORK, RES 100K	
RB610	1-236-424-11	NETWORK, RES 10K	
RB611	1-236-424-11	NETWORK, RES 10K	
RB612	1-236-424-11	NETWORK, RES 10K	
RB614	1-236-424-11	NETWORK, RES 10K	
RB616	1-236-432-11	NETWORK, RES 47K	
RB617	1-236-444-11	NETWORK, RES 470K	
RB618	1-236-436-11	NETWORK, RES 100K	
RB619	1-236-424-11	NETWORK, RES 10K	
RB661	1-236-424-11	NETWORK, RES 10K	
RB662	1-236-436-11	NETWORK, RES 100K	
RB681	1-236-424-11	NETWORK, RES 10K	
RB682	1-236-424-11	NETWORK, RES 10K	
		VARIABLE RESISTOR	
RV112	1-238-858-11	RES, ADJ, CERMET 47K	
RV113	1-238-858-11	RES, ADJ, CERMET 47K	
RV201	1-238-858-11	RES, ADJ, CERMET 47K	

Ref.No	Part No.	Description	Remark
RV202	1-238-853-11	RES, ADJ, CERMET 1K	
RV203	1-238-854-11	RES, ADJ, CERMET 2.2K	
RV204	1-238-855-11	RES, ADJ, CERMET 4.7K	
RV205	1-238-853-11	RES, ADJ, CERMET 1K	
RV206	1-238-858-11	RES, ADJ, CERMET 47K	
RV207	1-238-856-11	RES, ADJ, CERMET 10K	
RV208	1-238-853-11	RES, ADJ, CERMET 1K	
RV209	1-238-853-11	RES, ADJ, CERMET 1K	
RV210	1-238-853-11	RES, ADJ, CERMET 1K	
RV502	1-238-861-11	RES, ADJ, CERMET 470K	
RV602	1-238-858-11	RES, ADJ, CERMET 47K	
		FLEXIBLE BOARD	
W604	1-630-592-11	FP-184 FLEXIBLE BOARD	
		CRYSTAL	
X201	1-577-080-11	VIBRATOR, CRYSTAL	
X501	1-577-350-21	VIBRATOR, CRYSTAL	
X601	1-577-349-21	VIBRATOR, CRYSTAL	

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A-7062-396-A AU-92 BOARD, COMPLETE (Ref.No 6,000 Series)
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Ref.No	Part No.	Description	Remark
		CAPACITOR	
C421	1-126-206-11	ELECT CHIP 100MF 20% 6.3V	
C422	1-164-247-11	CERAMIC CHIP 0.047MF 10% 16V	
C423	1-135-177-21	TANTAL. CHIP 1MF 20% 20V	
C424	1-135-177-21	TANTAL. CHIP 1MF 20% 20V	
C425	1-162-969-11	CERAMIC CHIP 0.0068MF 10% 25V	
C426	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C427	1-162-967-11	CERAMIC CHIP 0.0033MF 10% 50V	
C428	1-135-180-21	TANTAL. CHIP 3.3MF 20% 6.3V	
C429	1-126-205-11	ELECT CHIP 47MF 20% 6.3V	
C430	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C431	1-126-199-11	ELECT CHIP 6.8MF 20% 35V	
C432	1-126-205-11	ELECT CHIP 47MF 20% 6.3V	
C433	1-126-206-11	ELECT CHIP 100MF 20% 6.3V	
C434	1-135-177-21	TANTAL. CHIP 1MF 20% 20V	
C435	1-126-206-11	ELECT CHIP 100MF 20% 6.3V	
C436	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C437	1-164-247-11	CERAMIC CHIP 0.047MF 10% 16V	
C438	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C439	1-135-149-21	TANTAL. CHIP 2.2MF 20% 10V	
C440	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C441	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C442	1-164-227-11	CERAMIC CHIP 0.022MF 10% 25V	
C443	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C444	1-135-145-11	TANTAL. CHIP 0.47MF 20% 35V	
C445	1-162-965-11	CERAMIC CHIP 0.0015MF 10% 50V	
C446	1-163-016-00	CERAMIC CHIP 0.0039MF 10% 50V	
C447	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C448	1-162-966-11	CERAMIC CHIP 0.0022MF	10%	50V	
C449	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C450	1-162-910-11	CERAMIC CHIP 5PF	0.25PF	50V	
C451	1-163-133-00	CERAMIC CHIP 470PF	5%	50V	
C452	1-162-910-11	CERAMIC CHIP 5PF	0.25PF	50V	
C453	1-162-968-11	CERAMIC CHIP 0.0047MF	10%	50V	
C454	1-162-957-11	CERAMIC CHIP 220PF	5%	50V	
C455	1-162-587-11	CERAMIC CHIP 0.039MF	10%	25V	
C456	1-162-963-11	CERAMIC CHIP 680PF	10%	50V	
C457	1-163-020-00	CERAMIC CHIP 0.0082MF	10%	50V	
C458	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C459	1-135-177-21	TANTAL. CHIP 1MF	20%	20V	
C460	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C461	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C462	1-135-149-21	TANTAL. CHIP 2.2MF	20%	10V	
C463	1-126-205-11	ELECT CHIP 47MF	20%	6.3V	
C464	1-126-205-11	ELECT CHIP 47MF	20%	6.3V	
C465	1-162-955-11	CERAMIC CHIP 150PF	5%	50V	
C466	1-162-966-11	CERAMIC CHIP 0.0022MF	10%	50V	
C467	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V	
C469	1-162-957-11	CERAMIC CHIP 220PF	5%	50V	
C470	1-162-953-11	CERAMIC CHIP 100PF	5%	50V	
C471	1-162-953-11	CERAMIC CHIP 100PF	5%	50V	

CONNECTOR

Ref.No	Part No.	Description	Remark
CN401	1-568-365-41	CONNECTOR, BOARD TO BOARD 14P	
CN402	*1-565-875-11	PIN, CONNECTOR (PC BOARD) 3P	
CN403	1-566-757-11	PIN, CONNECTOR (PC BOARD) 2P	

DIODE

Ref.No	Part No.	Description	Remark
D402	8-719-420-15	DIODE MA8082-M	

FILTER

Ref.No	Part No.	Description	Remark
FL401	1-236-145-11	FILTER, BAND PASS	

IC

Ref.No	Part No.	Description	Remark
IC401	8-752-033-01	IC CXA1237AR	

COIL

Ref.No	Part No.	Description	Remark
L401	1-412-032-11	INDUCTOR CHIP 100UH	
L402	1-410-658-31	INDUCTOR CHIP 220UH	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q406	8-729-140-67	TRANSISTOR 2SC4177	
Q407	8-729-905-15	TRANSISTOR DTC144WU	
Q408	8-729-220-93	TRANSISTOR 2SK209G	
Q409	8-729-117-32	TRANSISTOR 2SC4177	
Q410	8-729-117-32	TRANSISTOR 2SC4177	
Q411	8-729-905-15	TRANSISTOR DTC144WU	
Q412	8-729-905-09	TRANSISTOR DTA144WU	
Q413	8-729-117-32	TRANSISTOR 2SC4177	
Q414	8-729-905-09	TRANSISTOR DTA144WU	
Q415	8-729-142-91	TRANSISTOR 2SK853	
Q416	8-729-117-32	TRANSISTOR 2SC4177	
Q417	8-729-602-36	TRANSISTOR 2SA1602	
Q418	8-729-620-10	TRANSISTOR 2SA1602	
Q419	8-729-117-32	TRANSISTOR 2SC4177	

RESISTOR

Ref.No	Part No.	Description				Remark
R421	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R422	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R423	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R424	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R425	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R426	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R427	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R428	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R429	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R430	1-216-849-11	METAL GLAZE	220K	5%	1/16W	
R431	1-216-853-11	METAL GLAZE	470K	5%	1/16W	
R432	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R433	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R434	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R435	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R436	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R437	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R438	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R439	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R440	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R441	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R442	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R443	1-216-801-11	METAL GLAZE	22	5%	1/16W	
R444	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R445	1-216-851-11	METAL GLAZE	330K	5%	1/16W	
R446	1-216-843-11	METAL GLAZE	68K	5%	1/16W	
R447	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R448	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R449	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R450	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R451	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R452	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R453	1-216-649-11	METAL CHIP	820	0.50%	1/10W	
R454	1-216-649-11	METAL CHIP	820	0.50%	1/10W	
R455	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W	
R456	1-216-834-11	METAL GLAZE	12K	5%	1/16W	
R457	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R458	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R459	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R460	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R461	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R462	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R463	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R464	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R465	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R466	1-216-835-11	METAL GLAZE	15K	5%	1/16W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description		Remark
R467	1-216-832-11	METAL GLAZE 8.2K	5%	1/16W
R468	1-216-821-11	METAL GLAZE 1K	5%	1/16W
R469	1-216-820-11	METAL GLAZE 820	5%	1/16W
R470	1-216-814-11	METAL GLAZE 270	5%	1/16W
R471	1-216-810-11	METAL GLAZE 120	5%	1/16W
R472	1-216-822-11	METAL GLAZE 1.2K	5%	1/16W
R473	1-216-047-00	METAL GLAZE 820	5%	1/10W
R474	1-216-035-00	METAL GLAZE 270	5%	1/10W
R475	1-216-817-11	METAL GLAZE 470	5%	1/16W

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV401	1-238-856-11	RES, ADJ, CERMET 10K	
RV402	1-238-857-11	RES, ADJ, CERMET 22K	

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A-7062-397-A VC-81 BOARD, COMPLETE (Ref.No 2,000 Series)
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A-7068-181-A DT-77K BOARD, COMPLETE (HIC)

CAPACITOR

Ref.No	Part No.	Description		Remark
C101	1-135-211-11	TANTAL. CHIP 6.8MF	20%	6.3V
C102	1-135-162-21	TANTAL. CHIP 33MF	20%	6.3V
C103	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C104	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C105	1-135-162-21	TANTAL. CHIP 33MF	20%	6.3V
C108	1-126-607-11	ELECT CHIP 47MF	20%	4V
C109	1-135-181-21	TANTAL. CHIP 4.7MF	20%	6.3V
C112	1-162-919-11	CERAMIC CHIP 22PF	5%	50V
C131	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C132	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C133	1-164-633-11	CERAMIC CHIP 0.1MF	10%	25V
C134	1-135-079-21	TANTAL. CHIP 3.3MF	20%	35V
C136	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C137	1-135-177-21	TANTAL. CHIP 1MF	20%	20V
C138	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C141	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C142	1-164-633-11	CERAMIC CHIP 0.1MF	10%	25V
C143	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C145	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C149	1-164-337-11	CERAMIC CHIP 2.2MF		16V
C156	1-162-910-11	CERAMIC CHIP 5PF	0.25PF	50V
C157	1-162-910-11	CERAMIC CHIP 5PF	0.25PF	50V
C180	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C181	1-135-177-21	TANTAL. CHIP 1MF	20%	20V
C182	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C183	1-162-950-11	CERAMIC CHIP 56PF	5%	50V
C184	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C185	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C186	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C187	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C188	1-162-949-11	CERAMIC CHIP 47PF	5%	50V
C189	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C191	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C192	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C196	1-164-217-11	CERAMIC CHIP 150PF	0.25PF	50V
C197	1-162-922-11	CERAMIC CHIP 39PF	5%	50V
C198	1-162-957-11	CERAMIC CHIP 220PF	5%	50V
C199	1-162-925-11	CERAMIC CHIP 68PF	5%	50V
C200	1-162-919-11	CERAMIC CHIP 22PF	5%	50V
C201	1-162-945-11	CERAMIC CHIP 22PF	5%	50V
C202	1-162-638-11	CERAMIC CHIP 1MF		16V
C203	1-162-638-11	CERAMIC CHIP 1MF		16V
C204	1-162-638-11	CERAMIC CHIP 1MF		16V
C205	1-162-638-11	CERAMIC CHIP 1MF		16V
C206	1-162-638-11	CERAMIC CHIP 1MF		16V
C210	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C211	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C212	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C213	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C214	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C215	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C216	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C217	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C219	1-162-638-11	CERAMIC CHIP 1MF		16V
C220	1-162-638-11	CERAMIC CHIP 1MF		16V
C221	1-162-638-11	CERAMIC CHIP 1MF		16V
C222	1-162-638-11	CERAMIC CHIP 1MF		16V
C223	1-162-638-11	CERAMIC CHIP 1MF		16V
C224	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C225	1-162-638-11	CERAMIC CHIP 1MF		16V
C229	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C230	1-135-211-11	TANTAL. CHIP 6.8MF	20%	6.3V
C232	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C233	1-162-942-11	CERAMIC CHIP 12PF	5%	50V
C234	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C235	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C236	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C237	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C238	1-163-119-00	CERAMIC CHIP 120PF	5%	50V
C239	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C241	1-162-953-11	CERAMIC CHIP 100PF	5%	50V
C252	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C253	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C254	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C255	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C256	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C261	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C262	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C265	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C266	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C267	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C268	1-162-638-11	CERAMIC CHIP 1MF		16V
C269	1-162-638-11	CERAMIC CHIP 1MF		16V
C272	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C273	1-162-923-11	CERAMIC CHIP 47PF	5%	50V

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description		Remark
C274	1-162-925-11	CERAMIC CHIP 68PF	5%	50V
C275	1-162-916-11	CERAMIC CHIP 12PF	5%	50V
C280	1-135-145-11	TANTAL. CHIP 0.47MF	20%	35V
C281	1-162-923-11	CERAMIC CHIP 47PF	5%	50V
C282	1-162-925-11	CERAMIC CHIP 68PF	5%	50V
C283	1-162-916-11	CERAMIC CHIP 12PF	5%	50V
C301	1-162-926-11	CERAMIC CHIP 82PF	5%	50V
C304	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C305	1-135-177-21	TANTAL. CHIP 1MF	20%	20V
C306	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C307	1-162-915-11	CERAMIC CHIP 10PF	0.5PF	50V
C308	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C309	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C310	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C311	1-162-915-11	CERAMIC CHIP 10PF	0.5PF	50V
C313	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C315	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C316	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C317	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C318	1-126-205-11	ELECT CHIP 47MF	20%	6.3V
C319	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C320	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C321	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C322	1-162-638-11	CERAMIC CHIP 1MF		16V
C323	1-135-145-11	TANTAL. CHIP 0.47MF	20%	35V
C330	1-162-962-11	CERAMIC CHIP 470PF	10%	50V
C336	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C337	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C342	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C343	1-164-337-11	CERAMIC CHIP 2.2MF		16V
C344	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C346	1-162-922-11	CERAMIC CHIP 39PF	5%	50V
C348	1-163-103-00	CERAMIC CHIP 27PF	5%	50V
C349	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C360	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C362	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C363	1-135-181-21	TANTAL. CHIP 4.7MF	20%	6.3V
C364	1-135-181-21	TANTAL. CHIP 4.7MF	20%	6.3V
C365	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C366	1-135-180-21	TANTAL. CHIP 3.3MF	20%	6.3V
C367	1-135-180-21	TANTAL. CHIP 3.3MF	20%	6.3V
C368	1-135-180-21	TANTAL. CHIP 3.3MF	20%	6.3V
C369	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C370	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C371	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C372	1-135-072-21	TANTAL. CHIP 0.22MF	20%	35V
C373	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C374	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C378	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C379	1-135-145-11	TANTAL. CHIP 0.47MF	20%	35V
C380	1-163-115-00	CERAMIC CHIP 82PF	5%	50V
C389	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C416	1-162-949-11	CERAMIC CHIP 47PF	5%	50V

Ref.No	Part No.	Description		Remark
C501	1-135-181-21	TANTAL. CHIP 4.7MF	20%	6.3V
C502	1-162-957-11	CERAMIC CHIP 220PF	5%	50V
C503	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C504	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C505	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C506	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C507	1-162-962-11	CERAMIC CHIP 470PF	10%	50V
C508	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C509	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C510	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C511	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C512	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C513	1-162-913-11	CERAMIC CHIP 8PF	0.5PF	50V
C514	1-162-910-11	CERAMIC CHIP 5PF	0.25PF	50V
C515	1-162-920-11	CERAMIC CHIP 27PF	5%	50V
C516	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C517	1-164-337-11	CERAMIC CHIP 2.2MF		16V
C518	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C519	1-162-923-11	CERAMIC CHIP 47PF	5%	50V
C520	1-135-181-21	TANTAL. CHIP 4.7MF	20%	6.3V
C521	1-163-131-00	CERAMIC CHIP 390PF	5%	50V
C522	1-162-959-11	CERAMIC CHIP 330PF	5%	50V
C523	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C524	1-162-947-11	CERAMIC CHIP 33PF	5%	50V
C525	1-162-954-11	CERAMIC CHIP 120PF	5%	50V
C526	1-135-181-21	TANTAL. CHIP 4.7MF	20%	6.3V
C528	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C530	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C536	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C537	1-135-181-21	TANTAL. CHIP 4.7MF	20%	6.3V
C538	1-164-227-11	CERAMIC CHIP 0.022MF	10%	25V
C539	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C540	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C541	1-162-944-11	CERAMIC CHIP 18PF	5%	50V
C545	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C561	1-162-921-11	CERAMIC CHIP 33PF	5%	50V
C562	1-164-160-11	CERAMIC CHIP 20PF	10%	50V
C563	1-162-638-11	CERAMIC CHIP 1MF		16V
C564	1-162-915-11	CERAMIC CHIP 10PF	0.5PF	50V
C565	1-135-149-21	TANTAL. CHIP 2.2MF	20%	6.3V
C566	1-135-149-21	TANTAL. CHIP 2.2MF	20%	6.3V
C567	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C569	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C570	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C571	1-164-227-11	CERAMIC CHIP 0.022MF	10%	25V
C572	1-162-953-11	CERAMIC CHIP 100PF	5%	50V
C611	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C612	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C613	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C614	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C616	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C617	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C618	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description		Remark
C619	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C620	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C621	1-162-941-11	CERAMIC CHIP 10PF	0.5PF	50V
C623	1-162-957-11	CERAMIC CHIP 220PF	5%	50V
C624	1-162-957-11	CERAMIC CHIP 220PF	5%	50V
C625	1-162-928-11	CERAMIC CHIP 120PF	5%	50V
C626	1-162-926-11	CERAMIC CHIP 82PF	5%	50V
C627	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C628	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C629	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C631	1-162-966-11	CERAMIC CHIP 0.0022MF	10%	50V
C633	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C634	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C636	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C637	1-135-180-21	TANTAL. CHIP 3.3MF	20%	6.3V
C638	1-135-177-21	TANTAL. CHIP 1MF	20%	20V
C643	1-162-957-11	CERAMIC CHIP 220PF	5%	50V
C644	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C647	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C648	1-126-416-11	ELECT 220MF	20%	10V

CONNECTOR

Ref.No	Part No.	Description	Remark
CN302	1-568-333-11	CONNECTOR, BOARD TO BOARD 14P	
CN304	*1-565-543-11	PIN, CONNECTOR (PC BOARD) 4P	
CN802	1-568-366-41	CONNECTOR, BOARD TO BOARD 16P	
CN803	1-568-336-11	CONNECTOR, BOARD TO BOARD 20P	
CN804	1-568-366-41	CONNECTOR, BOARD TO BOARD 16P	
CN805	1-568-359-11	CONNECTOR, BOARD TO BOARD 20P	
CN806	1-568-367-41	CONNECTOR, BOARD TO BOARD 18P	

TRIMMER

Ref.No	Part No.	Description	Remark
CT141	1-141-368-11	CAP, CHIP TRIMMER	

DIODE

Ref.No	Part No.	Description	Remark
D101	8-719-404-46	DIODE MA110	
D102	8-719-404-46	DIODE MA110	
D131	8-719-404-32	DIODE MA141WA	
D132	8-719-404-46	DIODE MA110	
D141	8-713-200-48	DIODE 1T32	
D301	8-719-404-46	DIODE MA110	
D303	8-719-404-46	DIODE MA110	
D361	8-719-404-32	DIODE MA141WA	
D362	8-719-404-46	DIODE MA110	
D561	8-719-404-49	DIODE MA111	
D562⚠	8-719-420-51	DIODE MA729	
D611	8-719-404-32	DIODE MA141WA	

FILTER

Ref.No	Part No.	Description	Remark
FL181	1-236-189-11	FILTER, LOW PASS	
FL182	1-236-374-11	LPF, YDL	
FL183	1-236-375-11	LPF, YDL	
FL303	1-415-695-11	DL, LC	
FL501	1-236-451-11	BPF	
FL502	1-415-660-11	DL, LC	
FL503	1-236-450-11	LPF	
FL504	1-236-452-11	BPF	
FL610	1-236-209-11	FILTER, LOW PASS	

IC

Ref.No	Part No.	Description	Remark
IC141	8-752-335-85	IC CXD2109Q	
IC181	8-752-034-17	IC CXA1338R	
IC182	8-752-330-15	IC CXL1503N	
IC183	8-752-332-69	IC CXL5504M	
IC251	8-752-034-21	IC CXA1339R	
IC252	8-759-946-00	IC MB88341PFV	
IC301	8-752-033-34	IC CXA1072R	
IC302	8-759-946-00	IC MB88341PFV	
IC361	8-759-037-59	IC MC68HC05N4-SC406667	
IC362	8-759-937-56	IC S-8054ALB-LM-T1	
IC363	8-759-106-23	IC UPD4066BG	
IC364	8-759-150-05	IC UPC324G2-E1	
IC501	8-759-150-03	IC UPC1037GR-E1	
IC502	8-759-150-03	IC UPC1037GR-E1	
IC503	8-752-054-18	IC CXA1047M	
IC561	8-759-151-23	IC UPD7503GF-J51-3B8	
IC610	8-752-034-16	IC CXD1172AM	
IC611	8-759-502-04	IC MB88346PFV	
IC612	8-752-326-18	IC CXD1204R	
IC613	8-759-037-59	IC MC68HC05C4FU-SC411534	
IC615	8-759-100-94	IC UPC358G2	
IC616	8-759-030-74	IC SC14S66F	

COIL

Ref.No	Part No.	Description	Remark
L101	1-412-029-11	INDUCTOR CHIP 10UH	
L102	1-412-031-11	INDUCTOR CHIP 47UH	
L141	1-410-391-11	INDUCTOR CHIP 68UH	
L142	1-410-381-11	INDUCTOR CHIP 10UH	
L182	1-410-381-11	INDUCTOR CHIP 10UH	
L183	1-410-381-11	INDUCTOR CHIP 10UH	
L251	1-410-381-11	INDUCTOR CHIP 10UH	
L302	1-410-657-21	INDUCTOR CHIP 180UH	
L303	1-410-204-31	INDUCTOR CHIP 10UH	
L304	1-410-392-11	INDUCTOR CHIP 82UH	
L361	1-410-381-11	INDUCTOR CHIP 10UH	
L401	1-410-192-51	INDUCTOR CHIP 1UH	
L402	1-410-192-51	INDUCTOR CHIP 1UH	
L403	1-412-026-11	INDUCTOR CHIP 1UH	
L404	1-410-192-51	INDUCTOR CHIP 1UH	
L501	1-410-381-11	INDUCTOR CHIP 10UH	
L502	1-410-658-31	INDUCTOR CHIP 220UH	
L503	1-410-388-21	INDUCTOR CHIP 39UH	
L509	1-410-381-11	INDUCTOR CHIP 10UH	
L561	1-410-369-11	INDUCTOR CHIP 1UH	
L610	1-410-381-11	INDUCTOR CHIP 10UH	
L611	1-410-389-31	INDUCTOR CHIP 47UH	
L612	1-410-655-31	INDUCTOR CHIP 120UH	

When indicating parts by reference number, please include the board name.

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q101	8-729-402-84	TRANSISTOR XN4601	
Q102	8-729-402-84	TRANSISTOR XN4601	
Q106	8-729-905-23	TRANSISTOR 2SA1576	
Q107	8-729-402-84	TRANSISTOR XN4601	
Q111	8-729-402-84	TRANSISTOR XN4601	
Q112	8-729-402-84	TRANSISTOR XN4601	
Q113	8-729-921-58	TRANSISTOR DTA144TU	
Q131	8-729-421-23	TRANSISTOR XN1501	
Q132	8-729-905-35	TRANSISTOR 2SC4081R	
Q135	8-729-403-42	TRANSISTOR XN1401	
Q142	8-729-905-35	TRANSISTOR 2SC4081R	
Q181	8-729-905-35	TRANSISTOR 2SC4081R	
Q182	8-729-402-78	TRANSISTOR XN6401	
Q183	8-729-905-23	TRANSISTOR 2SA1576R	
Q184	8-729-905-35	TRANSISTOR 2SC4081R	
Q185	8-729-402-15	TRANSISTOR XN1501	
Q186	8-729-905-23	TRANSISTOR 2SA1576R	
Q187	8-729-905-23	TRANSISTOR 2SA1576R	
Q188	8-729-905-35	TRANSISTOR 2SC4081R	
Q189	8-729-905-23	TRANSISTOR 2SA1576R	
Q190	8-729-905-35	TRANSISTOR 2SC4081R	
Q191	8-729-402-78	TRANSISTOR XN6401	
Q192	8-729-402-78	TRANSISTOR XN6401	
Q193	8-729-402-78	TRANSISTOR XN6401	
Q194	8-729-905-23	TRANSISTOR 2SA1576R	
Q195	8-729-905-23	TRANSISTOR 2SA1576R	
Q196	8-729-905-35	TRANSISTOR 2SC4081R	
Q255	8-729-402-84	TRANSISTOR XN4601	
Q257	8-729-402-84	TRANSISTOR XN4601	
Q302	8-729-905-23	TRANSISTOR 2SA1576R	
Q303	8-729-905-23	TRANSISTOR 2SA1576R	
Q304	8-729-905-35	TRANSISTOR 2SC4081R	
Q307	8-729-402-81	TRANSISTOR XN4501	
Q310	8-729-905-35	TRANSISTOR 2SC4081R	
Q311	8-729-905-35	TRANSISTOR 2SC4081R	
Q312	8-729-905-35	TRANSISTOR 2SC4081R	
Q313	8-729-403-42	TRANSISTOR XN1401	
Q314	8-729-402-84	TRANSISTOR XN4601	
Q315	8-729-905-23	TRANSISTOR 2SA1576R	
Q361	8-729-403-07	TRANSISTOR XN1213	
Q362	8-729-403-10	TRANSISTOR XN6215	
Q363	8-729-905-35	TRANSISTOR 2SC4081R	
Q364	8-729-403-10	TRANSISTOR XN6215	
Q365	8-729-402-78	TRANSISTOR XN6401	
Q367	8-729-905-35	TRANSISTOR 2SC4081R	
Q368	8-729-403-10	TRANSISTOR XN6215	
Q501	8-729-905-43	TRANSISTOR 2SC4081R	
Q502	8-729-905-43	TRANSISTOR 2SC4081R	
Q503	8-729-905-23	TRANSISTOR 2SA1576R	
Q504	8-729-905-43	TRANSISTOR 2SC4081R	
Q505	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q508	8-729-905-43	TRANSISTOR 2SC4081R	
Q509	8-729-905-23	TRANSISTOR 2SA1576R	
Q561	8-729-905-23	TRANSISTOR 2SA1576R	
Q562	8-729-403-24	TRANSISTOR XN4210	
Q563	8-729-905-18	TRANSISTOR DTC144EU	
Q564	8-729-921-08	TRANSISTOR DTC144TU	
Q565	8-729-402-78	TRANSISTOR XN6401	
Q566	8-729-402-19	TRANSISTOR XN6501	
Q567	8-729-402-78	TRANSISTOR XN6401	
Q568 ⚠	8-729-109-44	TRANSISTOR 2SK94	
Q569	8-729-905-23	TRANSISTOR 2SA1576R	
Q570	8-729-905-15	TRANSISTOR DTC144WU	
Q571	8-729-920-39	TRANSISTOR IMT1US	
Q572	8-729-805-25	TRANSISTOR 2SB1121	
Q573	8-729-905-18	TRANSISTOR DTC144EU	
Q610	8-729-403-10	TRANSISTOR XN6215	
Q612	8-729-921-08	TRANSISTOR DTC144TU	
Q613	8-729-905-35	TRANSISTOR 2SC4081R	
Q614	8-729-905-35	TRANSISTOR 2SC4081R	
Q619	8-729-905-35	TRANSISTOR 2SC4081R	
Q620	8-729-905-35	TRANSISTOR 2SC4081R	
Q621	8-729-402-19	TRANSISTOR XN6501	

RESISTOR

Ref.No	Part No.	Description				Remark
R102	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R103	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R105	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R107	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R108	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R109	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R111	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R112	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R116	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R117	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R118	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R123	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R128	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R129	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R132	1-216-844-11	METAL GLAZE	82K	5%	1/16W	
R133	1-216-844-11	METAL GLAZE	82K	5%	1/16W	
R134	1-216-850-11	METAL GLAZE	270K	5%	1/16W	
R135	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R136	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R137	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R138	1-216-843-11	METAL GLAZE	68K	5%	1/16W	
R141	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R142	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R143	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R144	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R146	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R157	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R158	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W	
R159	1-216-864-11	METAL GLAZE	0	5%	1/16W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifé.

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description				Remark
R162	1-216-812-11	METAL GLAZE	180	5%	1/16W	
R163	1-216-811-11	METAL GLAZE	150	5%	1/16W	
R165	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R166	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R168	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R170	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R171	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R172	1-216-813-11	METAL GLAZE	220	5%	1/16W	
R173	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R174	1-216-296-00	METAL GLAZE	0	5%	1/8W	
R175	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R177	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R178	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R181	1-216-072-00	METAL GLAZE	9.1K	5%	1/10W	
R182	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R183	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R184	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R185	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R186	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R187	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W	
R188	1-216-812-11	METAL GLAZE	180	5%	1/16W	
R189	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R190	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R193	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R194	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R195	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R196	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R197	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R199	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R200	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R201	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R202	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R203	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R204	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R205	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R206	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R207	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R208	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R209	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R210	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R211	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R212	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R213	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R214	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R215	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R217	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R218	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R219	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R220	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R221	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R222	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R223	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R224	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R225	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R226	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R229	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R231	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R233	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R234	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R235	1-216-671-11	METAL CHIP	6.8K	0.50%	1/10W	
R236	1-216-673-11	METAL CHIP	8.2K	0.50%	1/10W	
R237	1-216-683-11	METAL CHIP	22K	0.50%	1/10W	
R238	1-216-671-11	METAL CHIP	6.8K	0.50%	1/10W	
R239	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W	
R240	1-216-681-11	METAL CHIP	18K	0.50%	1/10W	
R241	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R242	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R243	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R244	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R245	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R246	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R260	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R261	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R262	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R263	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R269	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R270	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R274	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R275	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R276	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R279	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R295	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R296	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R301	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R302	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R303	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R304	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R306	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R307	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R308	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R310	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R311	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R312	1-216-843-11	METAL GLAZE	68K	5%	1/16W	
R313	1-216-843-91	METAL GLAZE	68K	5%	1/16W	
R314	1-216-816-11	METAL GLAZE	390	5%	1/16W	
R315	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R316	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R318	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R319	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R320	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R322	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R323	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	
R327	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R328	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R329	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R330	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R337	1-216-675-11	METAL CHIP	10K	0.50%	1/10W	
R338	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R339	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R340	1-216-296-00	METAL GLAZE	0	5%	1/8W	
R341	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R342	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W	
R347	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R348	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R349	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R350	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R351	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R352	1-216-843-11	METAL GLAZE	68K	5%	1/16W	
R353	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R355	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R356	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R357	1-216-849-11	METAL GLAZE	220K	5%	1/16W	
R358	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R359	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R361	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R363	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R364	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R365	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R366	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R367	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R368	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R369	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R370	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R371	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R372	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R373	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R374	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R375	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R376	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R377	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R378	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R382	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R383	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R384	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R385	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R386	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R388	1-216-853-11	METAL GLAZE	470K	5%	1/16W	
R391	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R392	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R394	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R395	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R397	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R398	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R401	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R402	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R403	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R404	1-216-849-11	METAL GLAZE	220K	5%	1/16W	
R405	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R406	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R407	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R408	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R409	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R410	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R412	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R413	1-216-813-11	METAL GLAZE	220	5%	1/16W	
R414	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R415	1-216-813-11	METAL GLAZE	220	5%	1/16W	
R417	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R422	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R424	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R425	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R426	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R427	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R428	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R429	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R430	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R441	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R442	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R443	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R503	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R505	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R506	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R507	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R508	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R509	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R510	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R511	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R512	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R513	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R514	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R515	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R516	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R517	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R518	1-216-677-11	METAL CHIP	12K	0.50%	1/10W	
R519	1-216-671-11	METAL CHIP	6.8K	0.50%	1/10W	
R520	1-216-679-11	METAL CHIP	15K	0.50%	1/10W	
R521	1-216-679-11	METAL CHIP	15K	0.50%	1/10W	
R522	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R523	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R524	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R525	1-216-853-11	METAL GLAZE	470K	5%	1/16W	
R526	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R527	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R528	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R529	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R530	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R531	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R532	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R533	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R534	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R535	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	
R541	1-216-821-11	METAL GLAZE	1K	5%	1/16W	

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description				Remark
R543	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R547	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R548	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R549	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R550	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R551	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R552	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R560	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R561	1-216-849-11	METAL GLAZE	220K	5%	1/16W	
R562	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R563	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R564	1-216-851-11	METAL GLAZE	330K	5%	1/16W	
R565	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R566	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R567	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R568	1-216-097-00	METAL GLAZE	100K	1%	1/10W	
R569	1-216-852-11	METAL GLAZE	390K	5%	1/16W	
R570	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R571	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R572	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R573	1-216-851-11	METAL GLAZE	330K	5%	1/16W	
R574⚠.	1-216-809-11	METAL GLAZE	100	5%	1/16W	
R575	1-216-861-11	METAL GLAZE	2.2M	5%	1/16W	
R576	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R577	1-216-843-11	METAL GLAZE	68K	5%	1/16W	
R578	1-216-136-00	METAL GLAZE	2.7	5%	1/8W	
R579	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W	
R580	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R581	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R582	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R583	1-218-172-11	METAL GLAZE	680K	1%	1/10W	
R584	1-218-172-11	METAL GLAZE	680K	1%	1/10W	
R585	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R587	1-216-807-11	METAL GLAZE	68	5%	1/16W	
R589	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R612	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R618	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R619	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R620	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R621	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R623	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R624	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R631	1-216-844-11	METAL GLAZE	82K	5%	1/16W	
R632	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R633	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R634	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R635	1-216-854-11	METAL GLAZE	560K	5%	1/16W	
R636	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R637	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R638	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R639	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	
R640	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R641	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R642	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R643	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R644	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R645	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	
R646	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R647	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R649	1-216-685-11	METAL CHIP	27K	0.50%	1/10W	
R650	1-216-675-11	METAL CHIP	10K	0.50%	1/10W	
R651	1-216-675-11	METAL CHIP	10K	0.50%	1/10W	
R653	1-216-847-11	METAL GLAZE	150K	5%	1/16W	
R654	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R656	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W	
R657	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R659	1-216-844-11	METAL GLAZE	82K	5%	1/16W	
R661	1-216-813-11	METAL GLAZE	220	5%	1/16W	
R662	1-216-813-11	METAL GLAZE	220	5%	1/16W	
R663	1-216-813-11	METAL GLAZE	220	5%	1/16W	
R664	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R665	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	

NETWORK RESISTOR

RB101	1-236-424-11	NETWORK, RES	10K
RB181	1-236-414-11	NETWORK, RES	1.5K
RB182	1-236-412-11	NETWORK, RES	1.0K
RB183	1-236-420-11	NETWORK, RES	4.7K
RB184	1-236-420-11	NETWORK, RES	4.7K
RB252	1-236-409-11	NETWORK, RES	560
RB253	1-236-409-11	NETWORK, RES	560
RB362	1-236-436-11	NETWORK, RES	100K
RB363	1-236-424-11	NETWORK, RES	10K
RB561	1-236-436-11	NETWORK, RES	100K
RB562	1-236-436-11	NETWORK, RES	100K
RB563	1-236-412-11	NETWORK, RES	1.0K
RB564	1-236-436-11	NETWORK, RES	100K
RB565	1-236-436-11	NETWORK, RES	100K
RB566	1-236-436-11	NETWORK, RES	100K
RB567	1-236-412-11	NETWORK, RES	1.0K
RB569	1-236-412-11	NETWORK, RES	1.0K
RB570	1-236-432-11	NETWORK, RES	47K
RB571	1-236-412-11	NETWORK, RES	1.0K
RB572	1-236-412-11	NETWORK, RES	1.0K
RB574	1-236-436-11	NETWORK, RES	100K
RB575	1-236-436-11	NETWORK, RES	100K
RB576	1-236-424-11	NETWORK, RES	10K
RB577	1-236-424-11	NETWORK, RES	10K
RB611	1-236-424-11	NETWORK, RES	10K
RB613	1-236-436-11	NETWORK, RES	100K
RB614	1-236-424-11	NETWORK, RES	10K

VARIABLE RESISTOR

RV501	1-238-089-11	RES, ADJ CERMET	4.7K
RV502	1-238-089-11	RES, ADJ CERMET	4.7K
RV503	1-238-088-11	RES, ADJ, CERMET	2.2K

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
RV504	1-238-087-11	RES, ADJ CERMET 1K	
RV505	1-238-087-11	RES, ADJ CERMET 1K	
RV561	1-238-093-11	RES, ADJ CERMET 100K	

CRYSTAL

Ref.No	Part No.	Description	Remark
X101	1-567-898-11	OSCILLATOR, CRYSTAL	
X361	1-577-118-21	VIBRATOR, LITHIUM NIOBATE	
X561	1-579-049-21	VIBRATOR, CRYSTAL	

****

A-7071-269-A CB-32 BOARD, COMPLETE (Ref.No 5,000 Series)
****

CONNECTOR

Ref.No	Part No.	Description	Remark
CN961	1-568-326-11	CONNECTOR, BOARD TO BOARD 7P	

****

A-7071-270-A CB-33 BOARD, COMPLETE (Ref.No 7,000 Series)
****

CONNECTOR

Ref.No	Part No.	Description	Remark
CN963	1-568-327-11	CONNECTOR, BOARD TO BOARD 8P	

****

A-7062-398-A LD-38 BOARD, COMPLETE (Ref.No 3,000 Series)
****

CAPACITOR

Ref.No	Part No.	Description			Remark
C701	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C702	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C703	1-162-968-11	CERAMIC CHIP 0.0047MF	10%	50V	
C706	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C707	1-135-181-21	TANTAL. CHIP 4.7MF	20%	6.3V	
C708	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C709	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C710	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C711	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V	
C713	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V	
C714	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C715	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C716	1-162-637-11	CERAMIC CHIP 0.47MF		16V	

CONNECTOR

Ref.No	Part No.	Description	Remark
CN702	1-566-540-11	CONNECTOR, FPC (NON ZIF) 8P	
CN703	*1-565-543-11	PIN, CONNECTOR (PC BOARD) 4P	
CN704	*1-565-543-21	PIN, CONNECTOR (PC BOARD) 4P	
CN705	*1-565-542-11	PIN, CONNECTOR (PC BOARD) 3P	

DIODE

Ref.No	Part No.	Description	Remark
D701	8-719-404-46	DIODE MA110	

IC

Ref.No	Part No.	Description	Remark
IC701	8-759-037-20	IC MPC1737	
IC702	8-759-100-94	IC UPC358G2	
IC702	8-759-998-98	IC LM358DR	
IC703	8-759-981-82	IC RC3414M	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q701	8-729-905-15	TRANSISTOR DTC144WUT106	
Q702	8-729-920-39	TRANSISTOR IMT1US-T110	
Q703	8-729-905-61	TRANSISTOR DTC124EUT106	
Q704	8-729-905-23	TRANSISTOR 2SA1576	
Q706	8-729-820-88	TRANSISTOR 2SB1121	
Q707	8-729-905-35	TRANSISTOR 2SC4081T	

RESISTOR

Ref.No	Part No.	Description				Remark
R701	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R702	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R703	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R705	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R707	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R708	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R709	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R710	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R712	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R713	1-216-296-00	METAL GLAZE	0	5%	1/8W	
R714	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R715	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R716	1-216-309-00	METAL GLAZE	5.6	5%	1/10W	
R717	1-216-791-11	METAL GLAZE	3.3	5%	1/16W	
R718	1-216-791-11	METAL GLAZE	3.3	5%	1/16W	
R719	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R720	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W	
R723	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R725	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R726	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R730	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R732	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R733	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	
R734	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R735	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R736	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R737	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R738	1-216-843-11	METAL GLAZE	68K	5%	1/16W	
R739	1-216-843-11	METAL GLAZE	68K	5%	1/16W	
R740	1-216-843-11	METAL GLAZE	68K	5%	1/16W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV701	1-238-860-11	RES, ADJ, CERMET 220K	

When indicating parts by reference number, please include the board name.

LD-38 DD-31

Ref.No	Part No.	Description	Remark
		FLEXIBLE BOARD	
W701	1-630-595-21	FP-187 FLEXIBLE BOARD	

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Ref.No	Part No.	Description	Remark
	A-7062-399-A	DD-31 BOARD, COMPLETE (Ref.No 7,000 Series) `**********************`	
	*3-749-758-02	CASE (UPPER), SHIELD, DD	
	*3-749-759-02	CASE (LOWER), SHIELD, DD	
		CAPACITOR	
C101	1-126-157-11	ELECT 10MF 20% 16V	
C103	1-127-558-11	ELECT(SOLID) 10MF 20% 10V	
C106	1-126-094-11	ELECT 4.7MF 20% 35V	
C108	1-126-094-11	ELECT 4.7MF 20% 35V	
C109	1-126-162-11	ELECT 3.3MF 20% 25V	
C110	1-126-157-11	ELECT 10MF 20% 16V	
C111	1-126-157-11	ELECT 10MF 20% 16V	
C112	1-126-805-11	ELECT 33MF 20% 10V	
C113	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C114	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C115	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C116	1-127-558-11	ELECT(SOLID) 10MF 20% 10V	
C117	1-127-558-11	ELECT(SOLID) 10MF 20% 10V	
C118	1-126-157-11	ELECT 10MF 20% 16V	
C120	1-127-558-11	ELECT(SOLID) 10MF 20% 10V	
C121	1-127-558-11	ELECT(SOLID) 10MF 20% 10V	
C122	1-126-162-11	ELECT 3.3MF 20% 25V	
C123	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C124	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C125	1-163-017-00	CERAMIC CHIP 0.0047MF 10% 50V	
C126	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	
C127	1-164-218-11	CERAMIC CHIP 180PF 0.25PF 50V	
C128	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C129	1-162-968-11	CERAMIC CHIP 0.0047MF 10% 50V	
C130	1-164-232-11	CERAMIC CHIP 0.01MF 10% 50V	
C131	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C132	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C136	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C137	1-164-182-11	CERAMIC CHIP 0.0033MF 10% 50V	
C139	1-164-182-11	CERAMIC CHIP 0.0033MF 10% 50V	
C140	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C141	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C142	1-164-227-11	CERAMIC CHIP 0.022MF 10% 25V	
C143	1-163-005-11	CERAMIC CHIP 470PF 10% 50V	
		CONNECTOR	
CN101	*1-566-198-11	PIN, CONNECTOR (PC BOARD) 5P	
		DIODE	
D101	8-719-941-04	DIODE SB07-03C	
D102	8-719-938-75	DIODE SB05-05CP	
D103	8-719-951-22	DIODE IMN10	
D104	8-719-941-04	DIODE SB07-03C	
D105	8-719-981-59	DIODE FC805	
		FUSE	
F101	⚠.1-532-778-21	FUSE, MICRO (SECONDARY) (1.6A 125V)	
F102	⚠.1-532-778-21	FUSE, MICRO (SECONDARY) (1.6A 125V)	
F103	⚠.1-532-778-21	FUSE, MICRO (SECONDARY) (1.6A 125V)	
		IC	
IC101	8-759-500-42	IC MB3783PFV	
IC102	8-759-998-94	IC LM311DR	
		JACK	
J101	1-537-309-11	TERMINAL BOARD (BATTERY)	
		COIL	
L101	1-410-337-11	INDUCTOR 1UH	
L102	1-410-337-11	INDUCTOR 1UH	
L103	1-410-337-11	INDUCTOR 1UH	
L104	1-424-104-11	COIL, CHOKE 10UH	
L105	1-424-105-11	COIL, CHOKE 22UH	
L106	1-424-104-11	COIL, CHOKE 10UH	
L107	1-412-034-21	INDUCTOR CHIP 330UH	
L108	1-412-034-21	INDUCTOR CHIP 330UH	
L109	1-412-034-21	INDUCTOR CHIP 330UH	
L110	1-424-104-11	COIL, CHOKE 10UH	
L111	1-424-106-11	COIL, CHOKE 47UH	
L112	1-424-105-11	COIL, CHOKE 22UH	
L113	1-424-104-11	COIL, CHOKE 10UH	
L114	1-424-105-11	COIL, CHOKE 22UH	
L115	1-412-030-11	INDUCTOR CHIP 22UH	
L116	1-412-027-11	INDUCTOR CHIP 2.2UH	
L117	1-410-337-11	INDUCTOR 1UH	
		TRANSISTOR	
Q101	8-729-421-90	TRANSISTOR XN4113	
Q102	8-729-805-25	TRANSISTOR 2SB1121	
Q103	8-729-822-82	TRANSISTOR 2SB1121	
Q104	8-729-119-83	TRANSISTOR 2SC4175-B3	
Q105	8-729-805-25	TRANSISTOR 2SB1121	
Q106	8-729-805-25	TRANSISTOR 2SB1121	
Q107	8-729-805-25	TRANSISTOR 2SB1121	
Q108	8-729-905-12	TRANSISTOR DTA144EU	
		RESISTOR	
R101	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R102	1-216-019-00	METAL GLAZE 56 5% 1/10W	
R103	1-216-009-00	METAL GLAZE 22 5% 1/10W	
R104	1-216-828-11	METAL GLAZE 3.9K 5% 1/16W	
R105	1-216-841-11	METAL GLAZE 47K 5% 1/16W	
R106	1-216-841-11	METAL GLAZE 47K 5% 1/16W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R107	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R108	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R109	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R110	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R111	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R112	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R113	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W	
R114	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R115	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R116	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R117	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R118	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W	
R119	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R120	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R121	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R122	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R123	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R124	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R126	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R127	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R128	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R129	1-216-019-00	METAL GLAZE	56	5%	1/10W	
R130	1-216-023-00	METAL GLAZE	82	5%	1/10W	
R131	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R132	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R133	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R134	1-216-849-11	METAL GLAZE	220K	5%	1/16W	
R135	1-216-102-00	METAL GLAZE	160K	5%	1/10W	
R136	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R137	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	
R138	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W	
R139	1-216-849-11	METAL GLAZE	220K	5%	1/16W	
R140	1-216-841-11	METAL GLAZE	47K	5%	1/16W	

VARIABLE RESISTOR

Ref.No	Part No.	Description
RV101	1-230-526-11	RES, ADJ, METAL GLAZE 47K
RV102	1-238-087-11	RES, ADJ CERMET 1K
RV103	1-238-087-11	RES, ADJ CERMET 1K
RV104	1-238-087-11	RES, ADJ CERMET 1K
RV105	1-238-089-11	RES, ADJ CERMET 4.7K

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*A-7062-400-A VF-41 BOARD, COMPLETE (Ref.No 9,000 Series)
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*3-747-126-01 HOLDER, LED

CAPACITOR

Ref.No	Part No.	Description			Remark
C951	1-126-176-11	ELECT	220MF	20%	6.3V
C952	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C954	1-135-091-00	TANTAL. CHIP	1MF	20%	16V
C955	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C956	1-131-387-41	TANTALUM	47MF	10%	6.3V

Ref.No	Part No.	Description			Remark
C957	1-162-638-11	CERAMIC CHIP	1MF		16V
C958	1-136-718-11	FILM CHIP	0.1MF	5%	25V
C959	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C960	1-127-486-81	ELECT(SOLID)	47MF	20%	6.3V
C961 ⚠.	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C962 ⚠.	1-162-625-11	CERAMIC CHIP	0.0047MF	5%	50V
C963 ⚠.	1-163-012-00	CERAMIC CHIP	0.0018MF	10%	50V
C964	1-126-090-11	ELECT	82MF	20%	10V
C965	1-124-257-00	ELECT	2.2MF	20%	35V
C966	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C967	1-164-611-11	CERAMIC CHIP	0.001MF	10%	500V
C968 ⚠.	1-162-625-11	CERAMIC CHIP	0.0047MF	5%	50V

CONNECTOR

Ref.No	Part No.	Description
CN951	*1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P
CN952	*1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P
CN953	*1-566-195-21	PIN, CONNECTOR (PC BOARD) 2P

DIODE

Ref.No	Part No.	Description
D951	8-719-820-65	DIODE TLS221
D952	8-719-400-25	DIODE LN25RP
D953	8-719-400-26	DIODE MA152WA
D954	8-719-420-15	DIODE MA8082

IC

Ref.No	Part No.	Description
IC951	8-759-420-01	IC AN2512S

COIL

Ref.No	Part No.	Description
L951	1-412-031-11	INDUCTOR CHIP 47UH
L952	1-408-781-00	INDUCTOR CHIP 22UH
L953 ⚠.	1-459-876-41	COIL, FERRITE (HLC)

TRANSISTOR

Ref.No	Part No.	Description
Q951	8-729-200-80	TRANSISTOR 2SA1163G
Q952	8-729-106-68	TRANSISTOR 2SD1615
Q953 ⚠.	8-729-100-66	TRANSISTOR 2SC1623

RESISTOR

Ref.No	Part No.	Description			
R951	1-216-041-00	METAL GLAZE	470	5%	1/10W
R952 ⚠.	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R953	1-216-041-00	METAL GLAZE	470	5%	1/10W
R954 ⚠.	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R955	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R956	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R957	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R958	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R959	1-216-113-00	METAL GLAZE	470K	5%	1/10W
R960	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R962	1-216-336-11	METAL GLAZE	47K	1%	1/10W
R963	1-216-099-00	METAL GLAZE	120K	5%	1/10W
R964	1-216-025-00	METAL GLAZE	100	5%	1/10W
R965	1-216-308-00	METAL GLAZE	4.7	5%	1/10W
R966	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

VF-41 | TI-32 | CC-52

Ref.No	Part No.	Description	Remark
R967	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R968	1-216-031-00	METAL GLAZE 180 5% 1/10W	
R969	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R971	1-216-870-11	METAL GLAZE 180K 1% 1/10W	
R973	1-216-005-00	METAL GLAZE 15 5% 1/10W	
R974	1-216-133-00	METAL GLAZE 3.3M 5% 1/10W	
R975	1-216-133-00	METAL GLAZE 3.3M 5% 1/10W	
R976	1-216-125-00	METAL GLAZE 1.5M 5% 1/10W	
R977	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R978	1-216-011-00	METAL GLAZE 27 5% 1/10W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV951	1-238-092-11	RES, ADJ CERMET 47K	
RV952	1-238-852-11	RES, ADJ, CERMET 470	
RV953	1-238-854-11	RES, ADJ, CERMET 2.2K	
RV954	1-238-647-11	RES, ADJ, METAL GLAZE 4.7M	
RV955	1-238-096-11	RES, ADJ CERMET 1M	

TRANSFORMER

Ref.No	Part No.	Description	Remark
T951⚠	.1-439-494-11	TRANSFORMER ASSY, FLYBACK	

THERMISTOR

Ref.No	Part No.	Description	Remark
TH951	1-807-938-11	THERMISTOR	

CONNECTOR

Ref.No	Part No.	Description	Remark
W651⚠	.1-526-978-31	SOCKET ASSY, CRT	

SHEET

Ref.No	Part No.	Description	Remark
Z003	*3-749-728-01	SHEET, INSULATING	

****

A-7062-415-A TI-32 BOARD, COMPLETE (Ref.No 4,000 Series)
****

CAPACITOR

Ref.No	Part No.	Description	Remark
C810	1-135-157-21	TANTAL. CHIP 10MF 20% 6.3V	
C811	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C813	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C814	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C815	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C816	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C817	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	

CONNECTOR

Ref.No	Part No.	Description	Remark
CN801	1-568-368-41	CONNECTOR, BOARD TO BOARD 20P	

TRIMMER

Ref.No	Part No.	Description	Remark
CT802	1-141-331-11	CAP, VAR, TRIMMER (CHIP)	

IC

Ref.No	Part No.	Description	Remark
IC802	8-759-150-75	IC UPD6145G-621	

COIL

Ref.No	Part No.	Description	Remark
L803	1-410-390-11	INDUCTOR CHIP 56UH	
L804	1-410-381-11	INDUCTOR CHIP 10UH	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q802	8-729-403-24	TRANSISTOR XN4210	

RESISTOR

Ref.No	Part No.	Description	Remark
R822	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R823	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R832	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R833	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R834	1-216-864-11	METAL GLAZE 0 5% 1/16W	

NETWORK RESISTOR

Ref.No	Part No.	Description	Remark
RB802	1-236-424-11	NETWORK, RES 10K	
RB804	1-236-424-11	NETWORK, RES 10K	

****

*A-7062-444-A CC-52 BOARD, COMPLETE (Ref.No 6,000 Series)
****

Ref.No	Part No.	Description	Remark
	1-569-346-11	CONNECTOR, FPC (TRANSLATION) 10P	

CAPACITOR

Ref.No	Part No.	Description	Remark
C271	1-135-157-91	TANTAL. CHIP 10MF 20% 6.3V	
C272	1-135-157-91	TANTAL. CHIP 10MF 20% 6.3V	
C290	1-164-346-11	CERAMIC CHIP 1MF 16V	
C291	1-164-346-11	CERAMIC CHIP 1MF 16V	
C292	1-164-346-11	CERAMIC CHIP 1MF 16V	

CONNECTOR

Ref.No	Part No.	Description	Remark
CN211	1-566-529-11	CONNECTOR, FPC (ZIF) 13P	
CN212	1-566-527-11	CONNECTOR, FPC (ZIF) 11P	
CN217	1-569-286-11	CONNECTOR, CARD EDGE 5P	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q281	8-729-903-27	TRANSISTOR FMW1	
Q282	8-729-903-27	TRANSISTOR FMW1	

RESISTOR

Ref.No	Part No.	Description	Remark
R271	1-216-339-91	METAL GLAZE 47K 1/10W	
R272	1-216-739-91	METAL GLAZE 100K 1/10W	
R273	1-216-324-91	METAL GLAZE 10K 1/10W	
R274	1-216-739-91	METAL GLAZE 100K 1/10W	
R275	1-216-700-91	METAL GLAZE 470K 1/10W	
R277	1-216-339-91	METAL GLAZE 47K 1/10W	
R278	1-216-739-91	METAL GLAZE 100K 1/10W	
R279	1-216-324-91	METAL GLAZE 10K 1/10W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifé.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
R280	1-216-739-91	METAL GLAZE 100K 1/10W	
R281	1-216-700-91	METAL GLAZE 470K 1/10W	
R290	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R291	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R292	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R293	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R296	1-216-041-00	METAL GLAZE 470 5% 1/10W	

FLEXIBLE BOARD

Ref.No	Part No.	Description	Remark
W213	1-636-495-11	FP312 FLEXIBLE BOARD	
W214	1-636-496-11	FP313 FLEXIBLE BOARD	

****

*A-7071-267-A EJ-20 BOARD, COMPLETE (Ref.No 12,000 Series)
****

CONNECTOR

Ref.No	Part No.	Description	Remark
CN915	1-565-874-21	PIN, CONNECTOR (PC BOARD) 2P	

SWITCH

Ref.No	Part No.	Description	Remark
S915	1-572-498-21	SWITCH, SLIDE (EJECT)	

****

*A-7071-268-A FK-41 BOARD, COMPLETE (Ref.No 10,000 Series)
****

CONNECTOR

Ref.No	Part No.	Description	Remark
CN902	1-565-874-21	PIN, CONNECTOR (PC BOARD) 2P	
CN903	1-566-543-31	CONNECTOR, FPC (NON ZIF) 11P	
CN904	*1-565-875-11	PIN, CONNECTOR (PC BOARD) 3P	
CN905	1-565-874-11	PIN, CONNECTOR (PC BOARD) 2P	

SWITCH

Ref.No	Part No.	Description	Remark
S901	1-572-283-11	SWITCH, SLIDE (POWER VTR/OFF/CAMERA)	
S902	1-572-438-11	SWITCH, TACTIL (REW ◁◁)	
S903	1-572-438-11	SWITCH, TACTIL (PB ▷)	
S904	1-572-438-11	SWITCH, TACTIL (FF ▷▷)	
S905	1-572-438-11	SWITCH, TACTIL (STOP □)	
S906	1-572-438-11	SWITCH, TACTIL (PAUSE ❚❚)	
S907	1-572-498-21	SWITCH, SLIDE (REC ● —▷)	

****

A-7071-271-A CD-50 BOARD, COMPLETE (Ref.No 1,000 Series)
****

CAPACITOR

Ref.No	Part No.	Description	Remark
C902	1-135-155-21	TANTAL. CHIP 4.7MF 20% 10V	
C903	1-135-159-21	TANTAL. CHIP 10MF 20% 20V	
C904	1-164-232-11	CERAMIC CHIP 0.01MF 10% 50V	
C905	1-135-162-21	TANTAL. CHIP 33MF 20% 6.3V	
C906	1-135-148-21	TANTAL. CHIP 1.5MF 20% 16V	

CONNECTOR

Ref.No	Part No.	Description	Remark
CN301	1-568-365-41	CONNECTOR, BOARD TO BOARD 14P	

COIL

Ref.No	Part No.	Description	Remark
L901	1-412-032-11	INDUCTOR CHIP 100UH	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q901	8-765-420-02	TRANSISTOR 2SK300-3	

RESISTOR

Ref.No	Part No.	Description	Remark
R901	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R902	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R903	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R904	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R905	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	

****

*A-7071-272-A CF-22 BOARD, COMPLETE (Ref.No 6,000 Series)
****

SWITCH

Ref.No	Part No.	Description	Remark
S766	1-572-499-11	SWITCH, TACTIL (FADER)	

****

*A-7071-274-A CF-23 BOARD, COMPLETE (Ref.No 8,000 Series)
****

DIODE

Ref.No	Part No.	Description	Remark
D751	8-719-109-93	DIODE RD6.2E-B	
D752	8-719-109-93	DIODE RD6.2E-B	
D755	8-719-420-41	DIODE MA123	

SWITCH

Ref.No	Part No.	Description	Remark
S756	1-572-288-11	SWITCH, PUSH (AUTO LOCK)	
S757	1-572-438-11	SWITCH, TACTIL (WHITE BALANCE)	
S758	1-572-438-11	SWITCH, TACTIL (BACK LIGHT)	
S759	1-572-438-11	SWITCH, TACTIL (FOCUS)	
S760	1-572-438-11	SWITCH, TACTIL (SHUTTER SPEED)	

BOARD

Ref.No	Part No.	Description	Remark
W756	1-636-589-11	FP-353 BOARD	

****

*A-7071-275-A CB-34 BOARD, COMPLETE (Ref.No 8,000 Series)
****

CONNECTOR

Ref.No	Part No.	Description	Remark
CN975	1-568-334-11	CONNECTOR, BOARD TO BOARD 16P	
CN976	*1-565-875-11	PIN, CONNECTOR (PC BOARD) 3P	
CN977	1-566-757-21	PIN, CONNECTOR (PC BOARD) 2P	
CN978	1-566-757-11	PIN, CONNECTOR (PC BOARD) 2P	

When indicating parts by reference number, please include the board name.

CB-34 JC-10 CB-35 SW-158 MA-71

RESISTOR

Ref.No	Part No.	Description	Remark
R930	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R931	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R932	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R933	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	

****

*A-7071-276-A CF-25 BOARD, COMPLETE (Ref.No 4,000 Series)
****

CONNECTOR

CN769	1-566-538-11	CONNECTOR, FPC (NON ZIF) 6P	

DIODE

D768	8-719-400-18	DIODE MA152WK	

SWITCH

S768	1-572-438-11	SWITCH, TACTIL (EDIT SERCH +)	
S769	1-572-438-11	SWITCH, TACTIL (EDIT SERCH -)	
S770	1-572-497-21	SWITCH, SLIDE (EDIT)	

****

*A-7071-277-A JC-10 BOARD, COMPLETE (Ref.No 3,000 Series)
****

CONNECTOR

CN971	1-568-335-11	CONNECTOR, BOARD TO BOARD 18P	

****

*A-7071-278-A CB-35 BOARD, COMPLETE (Ref.No 4,000 Series)
****

****

*A-7071-279-A SW-158 BOARD, COMPLETE (Ref.No 11,000 Series)
****

CAPACITOR

C942	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	
C943	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	
C944	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	
C945	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	

DIODE

D941	8-719-420-15	DIODE MA8082-M	
D942	8-719-106-71	DIODE RD12M-B2	
D943	8-719-400-18	DIODE MA152WK	
D944	8-719-420-15	DIODE MA8082-M	
D945	8-719-420-15	DIODE MA8082-M	

JACK

Ref.No	Part No.	Description	Remark
J941	1-565-276-11	JACK, ULTRA SMALL 1P (REMOTE)	
J942	1-568-027-11	JACK, SMALL TYPE 1P (EARPHONE)	

COIL

L941	1-410-369-11	INDUCTOR CHIP 1UH	
L942	1-410-369-11	INDUCTOR CHIP 1UH	
L943	1-410-369-11	INDUCTOR CHIP 1UH	
L944	1-410-369-11	INDUCTOR CHIP 1UH	
L945	1-410-369-11	INDUCTOR CHIP 1UH	

SWITCH

S921	1-553-977-00	SWITCH, SLIDE (LOCK/STANDBY)	
S922	1-571-315-11	SWITCH, KEY BOARD (START/STOP)	

FLAT CABLE

W941	1-590-102-11	CABLE, FLAT (FFC-1)	

****

A-7071-280-A MA-71 BOARD, COMPLETE (Ref.No 3,000 Series)
****

CAPACITOR

C401	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C402	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C403	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C404	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C406	1-162-587-11	CERAMIC CHIP 0.039MF 10% 25V	
C407	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C408	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C409	1-124-967-11	ELECT 10MF 20% 10V	
C410	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C411	1-135-181-21	TANTAL. CHIP 4.7MF 20% 6.3V	
C412	1-135-181-21	TANTAL. CHIP 4.7MF 20% 6.3V	
C413	1-126-205-11	ELECT CHIP 47MF 20% 6.3V	
C414	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C415	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C416	1-162-941-11	CERAMIC CHIP 10PF 0.5PF 50V	

CONNECTOR

CN404	*1-565-543-11	PIN, CONNECTOR (PC BOARD) 4P	

DIODE

D401	8-719-420-15	DIODE MA8082-M	

JACK

J904	1-568-027-11	JACK, SMALL TYPE 1P	

TRANSISTOR

Q402	8-729-905-35	TRANSISTOR 2SC4081R	
Q403	8-729-905-35	TRANSISTOR 2SC4081R	
Q404	8-729-905-35	TRANSISTOR 2SC4081R	
Q405	8-729-905-35	TRANSISTOR 2SC4081R	
Q481	8-729-905-35	TRANSISTOR 2SC4081R	

When indicating parts by reference number, please include the board name.

RESISTOR

Ref.No	Part No.	Description	Remark
R401	1-216-823-11	METAL GLAZE 1.5K 5% 1/16W	
R402	1-216-834-11	METAL GLAZE 12K 5% 1/16W	
R403	1-216-844-11	METAL GLAZE 82K 5% 1/16W	
R404	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R405	1-216-832-11	METAL GLAZE 8.2K 5% 1/16W	
R406	1-216-831-11	METAL GLAZE 6.8K 5% 1/16W	
R407	1-216-836-11	METAL GLAZE 18K 5% 1/16W	
R408	1-216-831-11	METAL GLAZE 6.8K 5% 1/16W	
R409	1-216-836-11	METAL GLAZE 18K 5% 1/16W	
R410	1-216-810-11	METAL GLAZE 120 5% 1/16W	
R411	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W	
R412	1-216-836-11	METAL GLAZE 18K 5% 1/16W	
R413	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R414	1-216-828-11	METAL GLAZE 3.9K 5% 1/16W	
R415	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R416	1-216-815-11	METAL GLAZE 330 5% 1/16W	
R417	1-216-828-11	METAL GLAZE 3.9K 5% 1/16W	
R418	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R419	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R484	1-216-296-00	METAL GLAZE 0 5% 1/8W	
R485	1-216-864-11	METAL GLAZE 0 5% 1/16W	

****

Ref.No	Part No.	Description	Remark
	1-628-060-12	FP-89 FLEXIBLE BOARD (Ref.No 12,000 Series) **********************	
	1-572-173-11	SWITCH, SLIDE (ENCODER)	
	3-728-869-02	HOLDER, SENSOR	

DIODE

Ref.No	Part No.	Description	Remark
D301	8-719-820-44	PHOTO COUPLER TLP907-0	
D302	8-719-979-92	DIODE SPI-315-25-CD	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q301	8-729-906-48	TRANSISTOR EE-TP109	

****

Ref.No	Part No.	Description	Remark
	1-628-061-12	FP-90 FLEXIBLE BOARD (Ref.No 13,000 Series) **********************	
	3-728-837-01	HOLDER, LED	
	3-728-869-02	HOLDER, SENSOR	

DIODE

Ref.No	Part No.	Description	Remark
D303	8-719-940-81	DIODE GL452S	
D304	8-719-820-44	PHOTO COUPLER TLP907-0	
D305	8-719-979-92	DIODE SPI-315-25-CD	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q302	8-729-906-48	TRANSISTOR EE-TP109	

SWITCH

Ref.No	Part No.	Description	Remark
S302	1-572-298-11	SWITCH, PUSH (3 KEY) (REC PROOF/TAPE SELECT)	

****

MISCELLANEOUS
****

Ref.No	Part No.	Description	Remark
	A-7071-263-A	FP-355 BOARD, COMPLETE	
	A-7071-264-A	FP-363 BOARD, COMPLETE	
	1-537-295-31	TERMINAL BOARD, LITIUM	
	1-542-126-11	MICROPHONE UNIT	
	1-547-445-11	FILTER BLOCK, OPTICAL	
	1-569-347-11	CONNECTOR, FPC (TRANSLATION) 13P	
	1-572-496-11	SWITCH, PUSH (ZOOM SWITCH UNIT)	
	1-590-103-11	CABLE, FLAT (FFC-9)	
	1-636-494-11	JK-67 BOARD (VIDEO/AUDIO IN/OUT RFU DC OUT)	
	1-636-498-11	FP-316 FLEXIBLE BOARD	
	1-808-505-12	SENSOR (DEW)	
	1-809-146-11	DISPLAY BLOCK, LIQUID CRYSTAL	
	3-747-174-01	LID, BATTERY CASE, LITHIUM	
IC901	8-752-604-50	IC ICX044AK-1 (CCD IMAGER) (ON CD-50 BOARD)	
M902	8-835-331-01	MOTOR, DC U-22A (CAPSTAN)	
M903	A-7040-208-A	MOTOR ASSY, THREADING (LOADING)	
V901⚠	1-452-566-11	CRT ASSY (M01KKX07WB10)	

****

ACCESSORIES AND PACKING MATERIALS
****

Part No.	Description	Remark
*3-704-281-01	BAG, PROTECTION (STANDARD)	
3-707-568-01	ADAPTOR, LENS HOOD	
3-735-474-01	FLYER, PV/DECK (US MODEL)	
*3-749-364-01	CUSHION (UPPER)	
*3-749-365-01	CUSHION (LOWER)	
3-752-246-21	MANUAL, INSTRUCTION (ENGLISH) (US/Canadian MODEL)	
3-752-246-31	MANUAL, INSTRUCTION (FRENCH) (Canadian MODEL)	
3-752-247-61	MANUAL, INSTRUCTION(ENGLISH, SPANISH) (E MODEL)	
3-752-248-21	INSTRUCTION (SPANISH) (US MODEL)	
*3-795-581-21	SAFEGUARD, IMPORTANT (US MODEL)	

**** ACCESSORIES AND PACKING MATERIALS (KIT) ****

Part No.	Description	Remark
A-6767-816-A	RFU ADAPTOR(RFU-89NA)(E MODEL)	
A-6768-253-A	RFU ADAPTOR (RFU-90UC) (US/Canadian MODEL)	
1-571-163-31	SWITCH, ANTENNA CHANGE(CABLE)	
3-741-582-01	BELT, SHOULDER	
*3-749-366-01	INDIVIDUAL CARTON (US/Canadian MODEL)	
*3-749-368-01	CUSHION (UPPER), ACC	
*3-749-369-01	CUSHION (LOWER), ACC	
*3-941-564-01	INDIVIDUAL CARTON(E MODEL)	
** AC-V35	AC POWER ADAPTOR	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

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Ne les remplacer que par une pièce portant le numéro spécifé.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
***	NP-55	BATTERY PACK	

Note

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.
*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

****

HARDWARE LIST
****

SCREW

7-621-283-10	SCREW +P 2X10
7-627-553-37	SCREW (M2X3), SPECIAL HEAD
7-627-553-37	PRECISION SCREW +P 2X3 TYPE 3
7-627-553-68	PRECISION SCREW +P 2X6 TYPE 3
7-627-555-88	SCREW (M1.4X1.8)
7-627-555-88	SCREW, PRECISION +P 1.4X1.8

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When indicating parts by reference number, please include the board name.

CCD-TR6/TR50

SONY
SERVICE MANUAL

US Model
Canadian Model
CCD-TR6

E Model
CCD-TR50

ADJUSTMENT

This adjustment comprises the following informations.

- Camera adjustment
- Mechanism block adjustment
- Video block adjustment

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Refer to the separate "8 mm Video Mechanical Adjustment Manual Ⅲ U Mechanism" for adjustment and checking of the mechanism block and for replacement of mechanical parts.

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There is the color reproduction standard frame at the back of the book.

SECTION 1
CAMERA ADJUSTMENTS

During the adjustment, see the arrangement diagram for adjustment parts from page 40.

1-1. PRE-ADJUSTMENT PREPARATIONS (CAMERA BLOCK)

1-1-1. List of Servicing Jigs

- Oscilloscope
- Adjusting screwdriver
- Regulated power supply (2 units)
- Color monitor
- Vectorscope
- Stop watch
- Digital voltmeter

Ref. No.	Part Name	Part No.	Use
J-1	Filter (C14) for color temperature correction	J-6080-058-A	Auto white balance adjustment/confirmation Outdoor white balance adjustment/confirmation
J-2	ND filter 1.0	J-6080-808-A	Max. gain adjustment (two filters used)
	ND filter 0.4	J-6080-806-A	Iris adjustment, Hall in/out adjustment (two used), Max. gain adjustment
	ND filter 0.1	J-6080-807-A	Iris adjustment, Hall in/out adjustment
J-3	Pattern box PTB-500	J-6029-140-A	
J-4	Pattern box color chart	J-6020-250-A	
J-5	Siemens star	J-6080-875-A	For flange back adjustment
J-6	AF microprocessor data reading jig	J-6082-025-A	
J-7	Adjustment remote commander (RM-95 Modification)	J-6082-053-A	
J-8	Extension cord (16P)	J-6082-062-A	Extension cord for cabinet R (during operation)
	Extension cord (14P)	J-6082-061-A	Extension cord for CD-50 board (when repairing VC-81 board)
	Extension cord (20P)	J-6082-063-B	Extension cord for LD-38 board (when repairing VC-81 board)
			Extension cord for TI-31 board (when repairing TI-31 board)
J-9	Extension cord (10P)	J-6082-064-A	Extension cord for JK-67 board (when repairing VS-63 board)
J-10	Extension cord (3P)	J-6082-041-A	Extension cord for cabinet R (during operation)

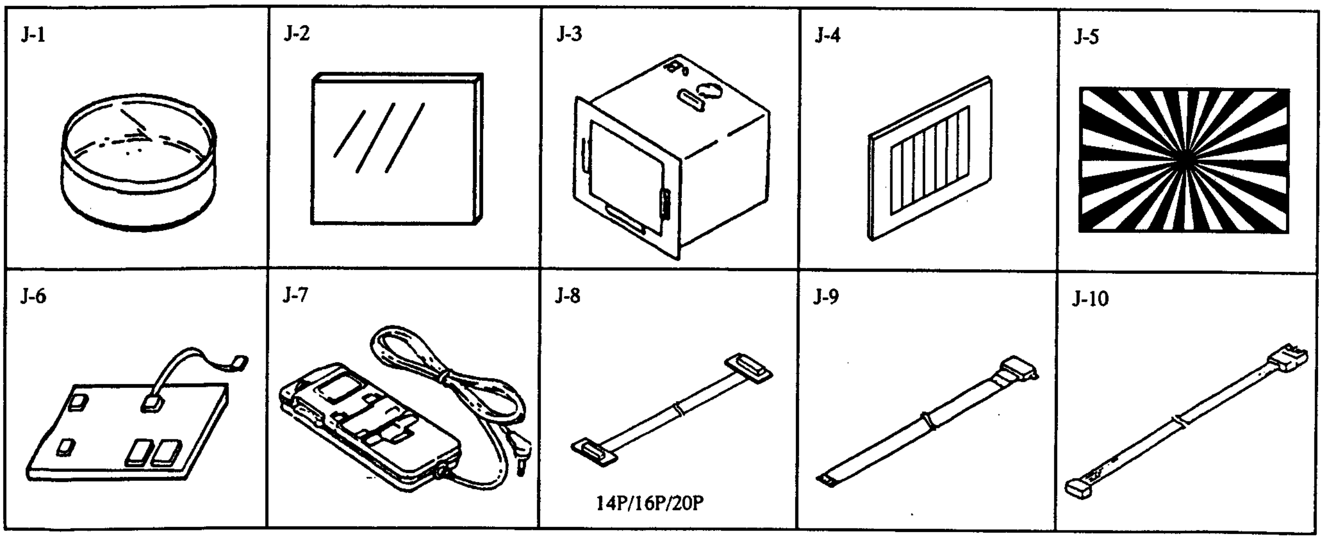


Fig. 1-1.

1-1-2. Preparations

Note: Refer to of service manual (9-972-996-11) for details on removal of the cabinet and various boards.

1) Connect the various devices for adjustment as shown in Fig. 1-3.
2) The EVF (electronic viewfinder) is needed for confirmation of the white balance mode and shutter speed. Remove CN205 on the VS-63 board when the EVF is not needed.
3) The mic amplifier (MA-71 board) is not needed. Remove CN402 on the AU-92 board.
4) The LCD block is not needed. Remove CN806 on the VC-81 board.

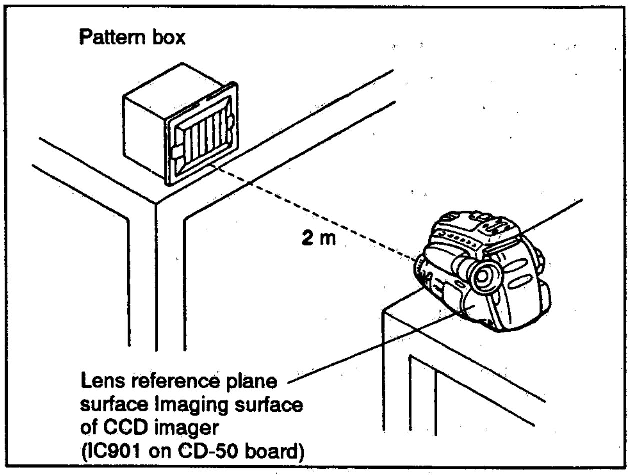
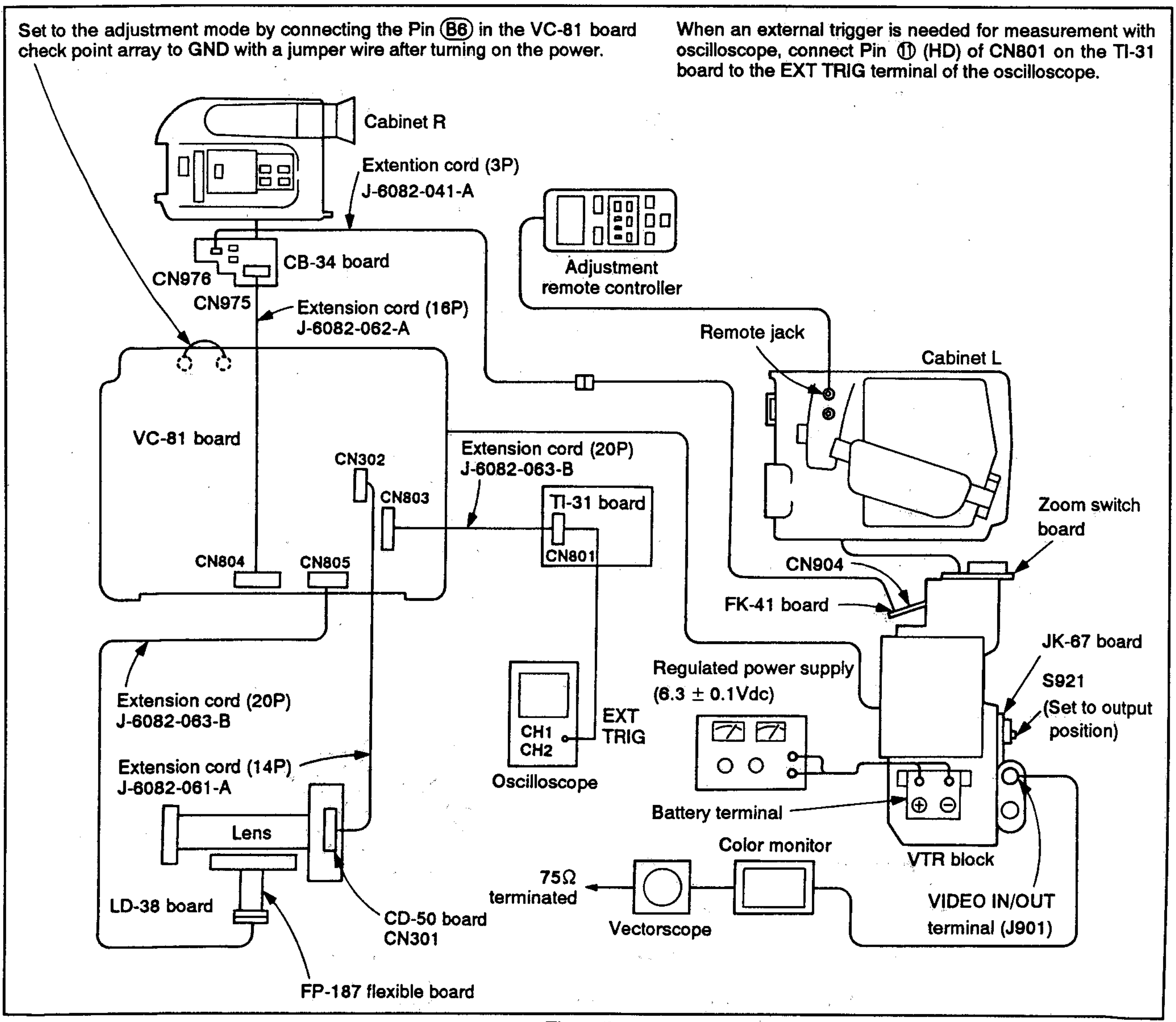

Pattern box
2 m
Lens reference plane surface Imaging surface of CCD imager (IC901 on CD-50 board)

Fig. 1-2.


Set to the adjustment mode by connecting the Pin (B6) in the VC-81 board check point array to GND with a jumper wire after turning on the power.

When an external trigger is needed for measurement with oscilloscope, connect Pin ⑪ (HD) of CN801 on the TI-31 board to the EXT TRIG terminal of the oscilloscope.

Cabinet R
Extention cord (3P)
J-6082-041-A
CB-34 board
CN976
CN975
Extension cord (16P)
J-6082-062-A
Adjustment remote controller
Remote jack
Cabinet L
VC-81 board
CN302
CN803
CN804
CN805
Extension cord (20P)
J-6082-063-B
TI-31 board
CN801
Zoom switch board
CN904
FK-41 board
JK-67 board
S921
(Set to output position)
Regulated power supply
(6.3 ± 0.1Vdc)
Extension cord (20P)
J-6082-063-B
CH1
CH2
EXT TRIG
Oscilloscope
Extension cord (14P)
J-6082-061-A
Lens
Battery terminal
⊕ ⊖
Color monitor
VTR block
75Ω terminated
LD-38 board
CD-50 board
CN301
Vectorscope
VIDEO IN/OUT terminal (J901)
FP-187 flexible board

Fig. 1-3.

1-1-3. Precautions

1. Setting of switches

Unless otherwise specified, the switches are set to the following positions and adjustment is made without a cassette inserted.

1. Camera/video power switch (S901 on FK-41 board) ......CAMERA
2. Standby switch (S921 on SW-158 board)......STANDBY
3. Auto-lock switch (S756 on CF-23 board)......OFF
4. White balance button (S757 on CF-23 board) ......☼ (indoors white balance mode)
5. Shutter speed button (S760 on CF-23 board) ......NORMAL (1/60)
6. Input/output select switch (S921 on JK-67 board) ......OUTPUT
7. Back-light correction button (S758 on CF-23 board)......OFF

2. Adjustment order

As a rule, the adjustments are performed in the listed order.

3. Subjects

1) Color bar chart (standard picture frame)
   When performing adjustment using the color bar chart, adjust the picture frame shown in Fig. 1-4. (standard picture frame).
2) White pattern (standard picture frame)
   Remove the color bar chart from the pattern box and use the zoom lever so that the white pattern has the same size and is in the same position as the color bar chart (standard picture frame).

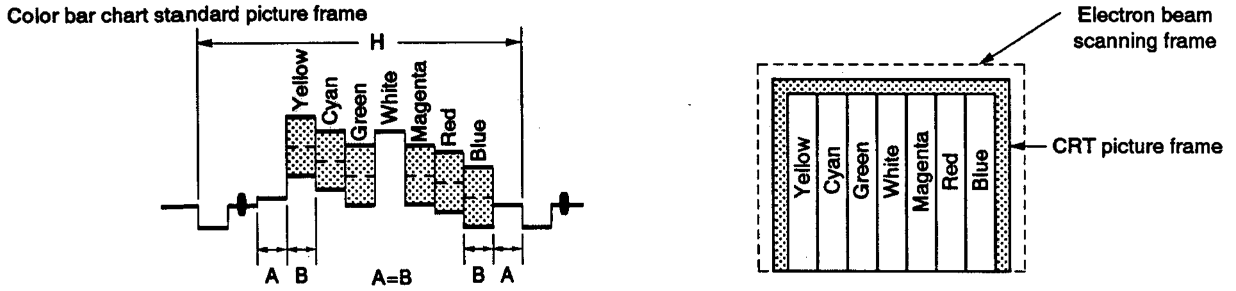

Color bar chart standard picture frame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
Electron beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. a (Video input/output terminal output waveform)

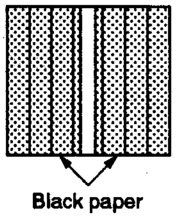
Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 1-4.

3) All white pattern
   Remove the color bar chart from the pattern box and set the zoom lever fully to the TELE (56 mm) side.
4) High luminance pattern
   Create the high luminance pattern as shown in Fig. 1-5., and adjust for the picture frame shown in Fig. 1-6.
5) Siemens star (J-6080-875-A)
   Adjust the direction of the camera so that center of the Siemens star is lined up with the center of the monitor screen on the monitor TV screen.

High luminance pattern


Black paper

Attach black paper over all sections of the pattern except for half of the white bar of the color bar chartt. Display the picture on the monitor with the standard picture frame.

Fig. 1-5.

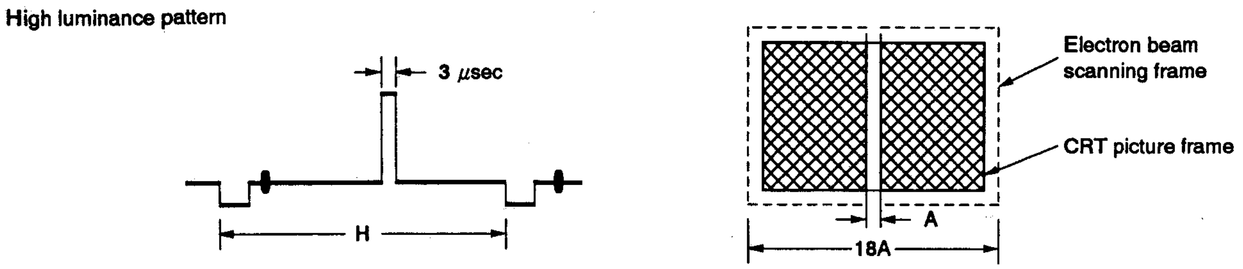

High luminance pattern
3 μsec
H
Electron beam scanning frame
CRT picture frame
A
18A

Fig. a (Video input/output terminal output waveform)

Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 1-6.

1-1-4. Adjustment Remote Controller

An EVR (electronic variable resistor) is used as the adjustment element for the camera block, replacing the conventional semi-fixed resistor. The EVR is controlled by the EVR/AWB microprocessor (IC361 on VC-81 board). This microprocessor reads the data written in the nonvolatile memory of the microprocessor and sends it to the EVR. The EVR D-A converts this data (8 bits for each adjustment point) and creates the adjustment voltage.

Thus, it is necessary to change the adjustment data contained in the nonvolatile memory when adjusting the camera block, and the adjustment memory is used for this purpose.

The adjustment remote controller performs bidirectional communications with the camera block microprocessor using the remote control signal lines (LANC). Adjustment addresses and adjustment data increment/decrement commands are sent to the camera block microprocessor from the adjustment remote controller. Adjustment addresses and adjustment data are sent from the camera block microprocessor to the adjustment remote controller.

1. Use of adjustment remote controller

Solder the lead wire to Pin (B6) (refer to 1-1-5.) of the check point array on the VC-81 board.

1) Connect the adjustment remote controller to the remote terminal (J941 on SW-158 board). (Set the HOLD switch of the adjustment remote controller to the HOLD position (SERVICE position).)
2) Turn on the power of the main unit.
3) Connect Pin (B6) ($\overline{\text{CAM ADJ}}$) of the check point array to GND using a jumper wire.
   (This connection causes the EVR/AWB microprocessor to cease normal remote control operation and to begin adjustment dedicated communications.)
   Note: Be sure to make this connection only after turning on the power. The following will be displayed on the LCD of the adjustment remote controller if the connection is normal. (Adjustment data varies according to the unit.)

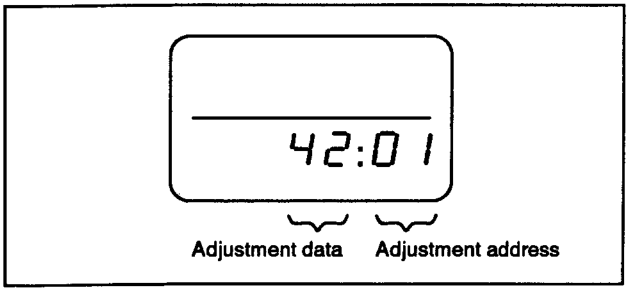


Fig. 1-7.

4) Designate the desired adjustment address using the adjustment remote controller. The adjustment address is incremented by pressing the FF (►►) button and decremented by pressing the REW (◄◄) button. (The adjustment address is indicated in hexadecimal, and there are 117 addresses from 01 to 75. The adjustment address corresponds to the EVR (IC252, IC302, IC611 on VC-81 board) output terminals. Refer to Table 1-3. for the adjustment contents of the various addresses.)
5) Perform adjustment by incrementing or decrementing the adjustment data.
   The adjustment data is incremented by pressing the PLAY (►) button. The adjustment data is decremented by pressing the STOP (■) button.
   - The adjustment data is indicated in hexadecimal.
     There are 256 values from 00 to FF.

Hexadecimal	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Indication	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal equivalent	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 1-1.

   - The adjustment data corresponds to the EVR (IC252, IC302, IC611 on VC-81 board) output voltage, and is as follows.

Adjustment data ( ) is decimal equivalent	EVR output voltage
FF (=255)	Maximum value (approx. 5 Vdc)
↑ F0 (=240)	↑
E0 (=224)	
D0 (=208)	
C0 (=192)	
B0 (=176)	
A0 (=160)	
90 (=144)	
80 (=128)	Center value (approx. 2.5 Vdc)
70 (=112)	
60 (=96)	
50 (=80)	
40 (=64)	
30 (=48)	
20 (=32)	
↓ 10 (=16)	↓
00 (=0)	Minimum value (approx. 0 Vdc)

Table 1-2.

6) The adjustment address is changed using the FF (►►) button or REW (◄◄) button to store the adjustment data in the nonvolatile memory of EVR/AWB microprocessor (IC361 on VC-81 board).
   (The new adjustment data is not stored in the nonvolatile memory unless this operation is performed.)

2. Precautions on use of adjustment remote controller

It is possible to accidentally erase correct adjustment data due to an error in operation of the adjustment remote controller. In order to prevent this, we recommend that you make a note of all adjustment data before adjustment and record the new adjustment data after completing each adjustment item.

Note: Data already described in the adjustment data memo column are fixed data.

Adjustment adderss	Adjustment voltage output terminal	Adjustment item	Remarks	Adjustment data memo column
01	Pin ⑱ of IC252	DELTA R	Auto white balance adjustment	
02	Pin ⑲ of IC252	DELTA B		
03	Pin ② of IC252	FADER	Input FF in fader level adjustment	00
04	Pin ③ of IC252	C PED		A0
05	Pin ④ of IC252	R–Y GAIN	Color reproduction adjustment	
06	Pin ⑤ of IC252	B–Y GAIN		
07	Pin ⑥ of IC252	R–Y HUE		
08	Pin ⑦ of IC252	B–Y HUE		
09	Pin ⑧ of IC252	C LEVEL	Chroma level adjustment	
0A	Pin ⑨ of IC252	TITLE Y	Title Y level adjustment	
0B	Pin ⑫ of IC252	R GAIN	Indoor white balance adjustment	
0C	Pin ⑬ of IC252	B GAIN		
0D	Pin ⑱ of IC302	C1 GAIN	Chroma signal matrix adjustment (1)	
0E	Pin ⑲ of IC302	Y1 GAIN	Y signal matrix adjustment	
0F	Pin ② of IC302	FADER LEVEL		
10	Pin ③ of IC302	BURST LEVEL		
11	Pin ④ of IC302	HUE CONT	Not used	———
12	Pin ⑤ of IC302	SYNC LEVEL		
13	Pin ⑥ of IC302	SET UP		
14	Pin ⑦ of IC302	WHITE CLIP (WC)		
15	Pin ⑧ of IC302	Y LEVEL		
16	Pin ⑨ of IC302	APERTURE		
17	Pin ⑫ of IC302	YH GAIN		
18	Pin ⑬ of IC302	C2 GAIN	Chroma signal matrix adjustment (2)	
19	Pin ⑱ of IC611	IRIS		
1A			Not used	———
1B	Pin ② of IC611	HALL OFFSET	Hall adjustment	
1C	Pin ③ of IC611	MAX GAIN		
1D	Pin ④ of IC611	AGC		
1E	Pin ⑤ of IC611	V SUB		
1F			Not used	———
20	Pin ⑦ of IC611	PG CONT		
21	Pin ⑧ of IC611	TITLE TH	Title A/D level adjustment	
22	Pin ⑨ of IC611	ZOOM L SPD	Power zoom speed fixed data	44
23	Pin ⑫ of IC611	ZOOM H SPD		44
24	Pin ⑬ of IC611	FOCUS SPEED		

Table 1-3. (1)

<table>
<tr><th>Adjustment adderss</th><th>Adjustment voltage output terminal</th><th>Adjustment item</th><th colspan="2">Remarks</th><th>Adjustment data memo column</th></tr>
<tr><td>25</td><td></td><td>MODE</td><td colspan="2">The following adjustment modes are selected by changing the adjustment data.<table>
<tr><th>Adjustment data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Release</td></tr>
<tr><td>01</td><td>Focus hunching</td></tr>
<tr><td>03</td><td>Zoom position</td></tr>
<tr><td>05</td><td>Hall, iris close</td></tr>
<tr><td>07</td><td>Hall, iris open</td></tr>
<tr><td>09</td><td>Hall in/out threshold</td></tr>
<tr><td>0B</td><td>Auto-focus AGC</td></tr>
<tr><td>FD</td><td>Auto-focus filter fixed at FA</td></tr>
<tr><td>FF</td><td>Auto-focus filter fixed at FH</td></tr>
</table></td><td>00</td></tr>
<tr><td>26</td><td></td><td>FG REF</td><td colspan="2"></td><td>36</td></tr>
<tr><td>27</td><td></td><td>MACRO</td><td colspan="2"></td><td></td></tr>
<tr><td>28</td><td></td><td>IN OUT DOOR</td><td colspan="2"></td><td>1A</td></tr>
<tr><td>29</td><td></td><td>BACK RUSH</td><td colspan="2"></td><td>31</td></tr>
<tr><td>2A</td><td></td><td>BASE-H</td><td colspan="2"></td><td>30</td></tr>
<tr><td>2B</td><td></td><td>LC-THR</td><td colspan="2"></td><td>18</td></tr>
<tr><td>2C</td><td></td><td>SEARCH</td><td colspan="2"></td><td>12</td></tr>
<tr><td>2D</td><td></td><td>HALL OUT</td><td colspan="2" rowspan="2">Hall in/out adjustment</td><td></td></tr>
<tr><td>2E</td><td></td><td>HALL IN</td><td></td></tr>
<tr><td>2F</td><td></td><td>STILL THR1</td><td colspan="2"></td><td>02</td></tr>
<tr><td>30</td><td></td><td>STILL THR2</td><td colspan="2"></td><td>02</td></tr>
<tr><td>31</td><td></td><td>STILL THR3</td><td colspan="2"></td><td>01</td></tr>
<tr><td>32</td><td></td><td>FH W</td><td colspan="2"></td><td></td></tr>
<tr><td>33</td><td></td><td>FH B</td><td colspan="2"></td><td></td></tr>
<tr><td>34</td><td></td><td>AGC W</td><td colspan="2"></td><td></td></tr>
<tr><td>35</td><td></td><td>AGC B</td><td colspan="2"></td><td></td></tr>
<tr><td>36</td><td></td><td>ZOOM THR</td><td colspan="2"></td><td>18</td></tr>
<tr><td>37</td><td></td><td>IRIS THR</td><td colspan="2"></td><td>18</td></tr>
<tr><td>38</td><td></td><td>V PULSE</td><td colspan="2"></td><td>68</td></tr>
<tr><td>39</td><td></td><td>R32MSB</td><td colspan="2" rowspan="6">3200K preset data
(The data written in this column are inputted automatically when performing the auto white balance adjustment.)</td><td></td></tr>
<tr><td>3A</td><td></td><td>R32LSB</td><td></td></tr>
<tr><td>3B</td><td></td><td>B32MSB</td><td></td></tr>
<tr><td>3C</td><td></td><td>B32LSB</td><td></td></tr>
<tr><td>3D</td><td></td><td>G32MSB</td><td></td></tr>
<tr><td>3E</td><td></td><td>G32LSB</td><td></td></tr>
<tr><td>3F</td><td></td><td>START R</td><td rowspan="2">R CONT and B CONT data when starting the auto white balance operation.</td><td rowspan="2">Auto white balance adjustment</td><td></td></tr>
<tr><td>40</td><td></td><td>START B</td><td></td></tr>
<tr><td>41</td><td></td><td>TM DIVID</td><td rowspan="2">Border value of the tracking frame</td><td rowspan="3">Auto white balance fixed data</td><td>44</td></tr>
<tr><td>42</td><td></td><td>BM DIVID</td><td>28</td></tr>
<tr><td>43</td><td></td><td>TOP SLP R</td><td>R CONT coefficient of the upper step of the tracking frame</td><td>80</td></tr>
</table>

Table 1-3. (2)

Adjustment adderss	Adjustment voltage output terminal	Adjustment item	Remarks		Adjustment data memo column
44		TOP SLP B	B CONT coefficient of the upper step of the tracking frame	Auto white balance adjustment	
45		MDL SLP R	R CONT and B CONT coefficient of the middle step of the tracking frame	Auto white balance fixed data	4B
46		MDL SLP B			40
47		BTM SLP R			30
48		BTM SLP B			50
49		KEIKO R			50
4A		KEIKO B			20
4B		TOP UP	Upper and lower limit frames of the upper step of the tracking frame	Auto white balance adjustment	
4C		TOP DWN			
4D		MDL UP	Upper and lower limit frames of the upper, middle and lower steps of the tracking frame	Auto white balance fixed data	85
4E		MDL DWN			70
4F		BTM UP			6E
50		BTM DWN			53
51		KEIKO DWN			58
52		R DWN LMT	R CONT data upper and lower limit of the tracking frame		21
53		R UP LMT			69
54		B UP LMT	B CONT data upper limit of the tracking frame	Auto white balance adjustment	
55		IN BTOP	INDOOR operation frame upper limit of the tracking frame		
56		IN BMAX	B CONT data upper limit of INDOOR mode		
57		OUT BMIN	B CONT data lower limit of OUTDOOR mode		
58		OUT BTM	OUTDOOR mode operation frame lower limit of the tracking frame		
59		B DWN LMT	B CONT data lower limit of the tracking frame	Auto white balance fixed data	10
5A		R OUTDOOR	White balance preset data	Auto white balance adjustment	
5B		B OUTDOOR			
5C		Ra	R CONT and B CONT data of the points a, b and c on the curve of blackbody radiation		
5D		Rb			
5E		Rc			
5F		Ba			
60		Bb			
61		Bc			
62		R/B TOP	Slope data of the curve of blackbody radiation		
63		R/B MDL			
64		R/B BTM			
65		B/R TOP			
66		B/R MDL			
67		B/R BTM			

Table 1-3. (3)

<table>
<tr><th>Adjustment adderss</th><th>Adjustment voltage output terminal</th><th>Adjustment item</th><th colspan="2">Remarks</th><th>Adjustment data memo column</th></tr>
<tr><td>68</td><td></td><td>KEIKO</td><td>Indoor AWB data</td><td rowspan="9">Auto white balance fixed data</td><td>60</td></tr>
<tr><td>69</td><td></td><td>LL LMT</td><td>Minimum tracking illuminance</td><td>08</td></tr>
<tr><td>6A</td><td></td><td>B HUE KEI</td><td rowspan="5">Variable linear matrix data</td><td>00</td></tr>
<tr><td>6B</td><td></td><td>R GAIN OFF</td><td>00</td></tr>
<tr><td>6C</td><td></td><td>R GAIN KEI</td><td>00</td></tr>
<tr><td>6D</td><td></td><td>R HUE OFF</td><td>00</td></tr>
<tr><td>6E</td><td></td><td>R HUE KEI</td><td>00</td></tr>
<tr><td>6F</td><td></td><td>DELAY TM</td><td>Tracking speed</td><td>10</td></tr>
<tr><td>70</td><td></td><td>FAST TM</td><td>Initial high speed tracking times</td><td>30</td></tr>
<tr><td>71</td><td></td><td>CAM DDS O</td><td colspan="2" rowspan="4">Fixed data</td><td>00</td></tr>
<tr><td>72</td><td></td><td>MODE</td><td>88</td></tr>
<tr><td>73</td><td></td><td>DSP MODE</td><td>00</td></tr>
<tr><td>74</td><td></td><td>CAM ALN</td><td>00</td></tr>
<tr><td>75</td><td></td><td>AWB MODE</td><td colspan="2">The following adjustment modes are selected by changing the adjustment data.
<table>
<tr><th>Adjustment data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Release, factory setting</td></tr>
<tr><td>10</td><td>Auto white balance adjustment mode</td></tr>
<tr><td>E0</td><td>3200K preset data read mode</td></tr>
<tr><td>F0</td><td>Auto white balance tracking zone discrimination invalid. All area discrimination mode.</td></tr>
</table></td><td>00</td></tr>
</table>

Table 1-3. (4)

1-1-5. Check Point Array

Almost all of the measurement points for camera block adjustment are located in the check point array on the VC-81 board. Solder short lead wires onto the terminals needed for adjustment and connect an oscilloscope, etc.
The terminal numbers and signal names for the check point array are shown in Table 1-4.

Terminal No.	Signal Name	Terminal No.	Signal Name
A1	G OUT	B1	N.C
A2	PG CONT	B2	N.C
A3	N.C	B3	Y (LPF) OUT
A4	Y0	B4	V SUB
A5	Y1	B5	AW ADJ
A6	C0	B6	$\overline{\text{CAM ADJ}}$
A7	C1	B7	OFF SET CONT
A8	CAM Y	B8	N.C
A9	YH	B9	N.C
A10	CAM C	B10	GND
A11	IRIS CONT	B11	IRIS DET

* N.C……no connection

Table 1-4.

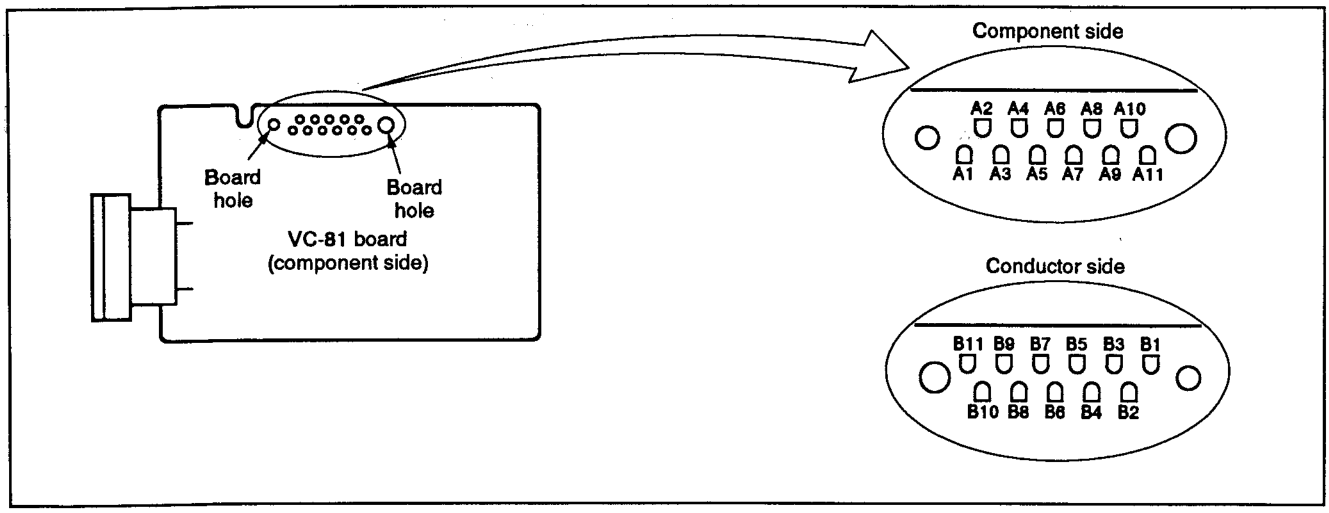

Board hole
Board hole
VC-81 board (component side)
Component side
A2 A4 A6 A8 A10
A1 A3 A5 A7 A9 A11
Conductor side
B11 B9 B7 B5 B3 B1
B10 B8 B6 B4 B2

Fig. 1-8.

1-1-6. AF Microprocessor Data Reading Jig

The AF microprocessor data reading jig converts the serial data (output data varies according to hall (iris) state, focus state, focus motor speed, zoom ring position, etc.) for adjustment output from the AF microprocessor (IC613 on VC-81 board) into a 2-digit hexadecimal code and displays it on the LED.

Connections:
Connect as shown in the diagram below.

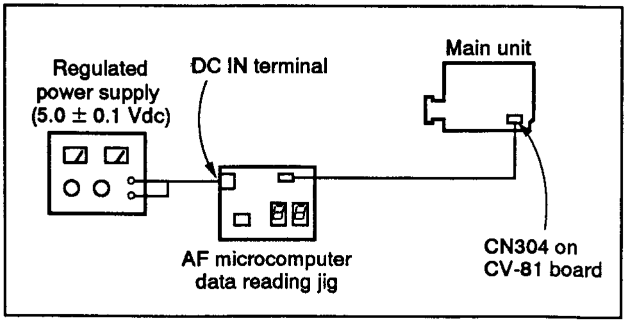

Regulated power supply (5.0 ± 0.1 Vdc)
DC IN terminal
Main unit
AF microcomputer data reading jig
CN304 on CV-81 board

Fig. 1-9.

1-1-7. Data Processing

For some of the adjustment items, calculation from the data (hexadecimal) indicated on the AF microprocessor data reading jig and adjustment remote controller is needed to obtain the adjustment data. In these cases, convert the hexadecimal values to decimal before calculation and reconvert the result to hexadecimal to obtain the adjustment data. A hexadecimal — decimal conversion table is shown in Table 1-5.

Hexadecimal-Decimal Conversion Table

Hexadecimal lower digit / Hexadecimal upper digit	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A(A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B(b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C(c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D(d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E(E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F(F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) is the indication on the jig or adjustment remote commander.

Example: The indication on the jig or adjustment remote commander is BD (b d).
As the upper digit is B (b) and the lower digit is D (d), a decimal value of 189 is obtained from the intersection of ① and ② in the above table.

Table 1-5.

1-2. CAMERA SYSTEM ADJUSTMENTS

1-2-1. Flange Back Adjustment

Subject	Siemens star (2 m directly in front of lens reference plane (CCD imager))
Measurement Point	Check with a monitor TV
Measuring Instrument	
Adjusting Element	Flange back adjusting pin
Tools	Phillips screwdriver, flat blade (–) screwdriver

Adjusting method:

1) Press the FOCUS switch (S759 on CF-1 board) to set to the MANUAL mode.
2) Position a Siemens star 2 m directly in front of the lens reference plane (See Fig. 1-2.).
3) Orient the camera block to have the center of the Siemens star imaged on the monitor TV screen coincide with the monitor screen center.
4) Check to assure the smooth motion of the lens zoom lever to both its extreme WIDE position (7 mm) and TELE position (56 mm), and then set it at the extreme WIDE position. (In this process, also check the monitor image to assure proper zooming operation.)
5) Select adjustment address 25 with the adjustment remote controller and enter adjustment data of 07. (Iris open mode)
   At this time, adjust the illumination on the Siemens star or place an ND filter over the lens, and confirm that the proper image is displayed on the monitor TV screen.
6) Set the lens focusing mark at the center of "2".

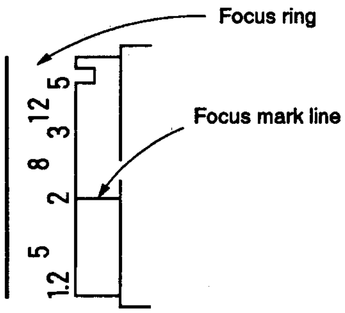


Fig. 1-10.

7) Loosen flange back setscrew ❶ with a Phillips screwdriver. (See Fig. 1-12.)
8) By turning the flange back adjusting Pin ❷ while watching the monitor screen, attain the optimum definition of a wedge at the Siemens star center on the screen. (Turn it a few turns to the left and right to ensure optimum definition.)
   Note: Do not turn the adjusting pin excessively in either direction.
9) While holding the flange back adjusting Pin ❷ to prevent further rotation, retighten the flange back setscrew ❶.
10) With the zoom lever fixed at its WIDE end, turn the focusing ring and set it to the position that provides the optimum definition image of the wedge. Check to assure the focusing mark protrusion position is within the range shown in Fig. 1-11. Also, rotate the focusing ring to the close (1.2 m) and far (∞) extremes and confirm that the wedge is no longer in focus.

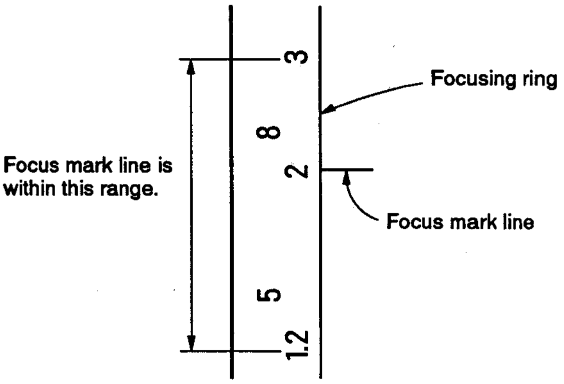


Fig. 1-11.

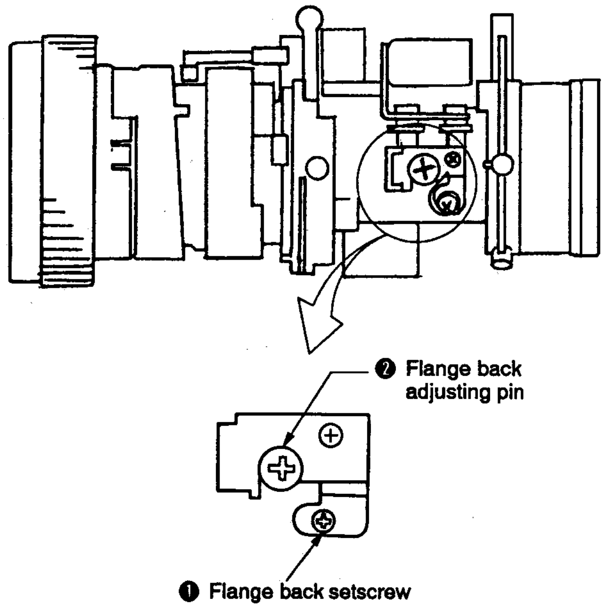


Fig. 1-12.

11) Fix the zoom lever at the extreme TELE position.
12) Turn the focusing ring and stop at the position where the wedge has optimum definition.
    Confirm that the focus mark is within ± 1.5 mm of "2".
13) Select adjustment address 25 with the adjustment remote controller and enter adjustment data of 00. (Iris normal)
14) Change the adjustment address to store the adjustment data in the memory.

1-2-2. Power Supply Adjustment

1 Power Supply Check (VC-81 Board)

Measuring Instrument	Digital voltmeter
CAM 5V Check	
Measurement Point	Pin ④ of W801
Specified Value	4.90 ± 0.05 Vdc
23V Check	
Measurement Point	Pin ① of W801
Specified Value	23.08 ± 0.50 Vdc
15V Check	
Measurement Point	Pin ② of W801
Specified Value	15.0 ± 0.5 Vdc
− 9V Check	
Measurement Point	Pin ③ of W801
Specified Value	−9.0 ± 0.5 Vdc

Checking method:

1) Confirm that each power supply voltage meet the specified value. If not, perform the power supply adjustment.

2 Power Supply Adjustment (DD-31 Board)

Measuring Instrument	Digital voltmeter
CAM 5V Adjustment	
Measurement Point	Pin ④ of CN103
Adjusting Element	RV102
Specified Value	4.90 ± 0.01 Vdc
CAM15V Adjustment	
Measurement Point	Pin ② of CN103
Adjusting Element	RV104
Specified Value	15.0 ± 0.03 Vdc

Adjusting method:

1) Adjust to the specified value with the corresponding adjusting elements.

1-2-3. EVR Initial Settings

Set to the following initial settings of the adjustment data only when the EVR/AWB microprocessor (IC361 on VC-81 board) was replaced.

Adjustment address	Adjustment data initial value	Adjustment address	Adjustment data initial value	Adjustment address	Adjustment data initial value
01 (DELTA R)	50	2B (LC-THR)	18	4E (MDL DWN)	70
02 (DELTA B)	50	2C (SEARCH)	12	4F (BTM UP)	6E
03(FADER OUT)	00	2F (STILL THR1)	02	50 (BTM DWN)	53
04 (C-PED)	A0	30 (STILL THR2)	02	51 (KEIKO DWN)	58
0F (FADER LEVEL)	A0	31 (STILL THR3)	01	52 (R DWN LMT)	21
12 (SYNC LEVEL)	90	32 (FH W)	00	53 (R TOP LMT)	69
13 (SET UP)	A0	33 (FH B)	01	59 (B DWN LMT)	10
14 (WC)	FF	34 (AGC W)	10	68 (KEIKO)	60
15 (Y LEVEL)	40	35 (AGC B)	3F	69 (LL LMT)	08
17 (YH GAIN)	FF	36 (ZOOM THR)	18	6A (B HUE KEI)	00
19 (IRIS)	FF	37 (IRIS THR)	18	6B (R GAIN OFF)	00
1C (MAX GAIN)	C0	38 (V PULSE)	68	6C (R GAIN KEI)	00
1D (AGC)	FF	41 (TM DIVID)	44	6D (R HUE OFF)	00
1E (V SUB)	40	42 (BM DIVID)	28	6E (R HUE KEI)	00
20 (PG CONT)	A0	43 (TOP SLP R)	80	6F (DELAY TM)	10
22 (ZOOM L SPD)	44	45 (MDL SLP R)	4B	70 (FAST TM)	30
23 (ZOOM H SPD)	44	46 (MDL SLP B)	40	71 (CAM DDSO)	00
26 (FG REF)	36	47 (BTM SLP R)	30	72 (MODE)	88
27 (MACRO)	09	48 (BTM SLP B)	50	73 (DSP MODE)	00
28 (IN/OUT DOOR)	1A	49 (KEIKO R)	50	74 (CAM ALN)	00
29 (BACK RUSH)	31	4A (KEIKO B)	20	75 (AWB MODE)	00
2A (BASE H)	30	4D (MDL UP)	85		

Table 1-6.

Adjusting method:

1) Set the RV701 (HALL ADJ) on the LD-38 board to the mechanical center.
2) Set the adjustment data at the various adjustment addresses to the initial values using the adjustment remote controller.
3) Change the adjustment address to store the last adjustment data in the memory.

1-2-4. PG CONT and VSUB Adjustment

1. PG CONT adjustment (VC-81 board)

Subject	Not needed
Measurement Point	Pin (A2) (PG CONT) of check point array
Measuring Instrument	Digital voltmeter
Adjustment Address	20 (PG CONT)
Specified Value	(Voltage indicated by the imager) ± 0.1 Vdc

Adjusting method:

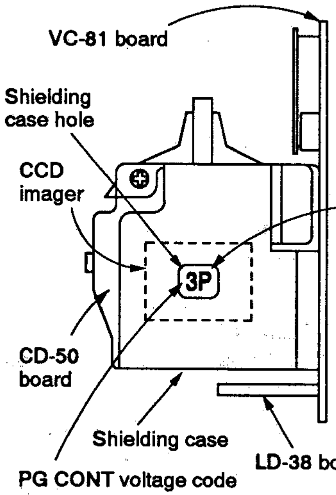
1) Change the adjustment data at adjustment address 20 using the adjustment remote controller to set the PG CONT voltage to (voltage indicated by the imager) ± 0.1 Vdc.
2) Change the adjustment address to store the adjustment data in the memory.

2. VSUB adjustment (VC-81 board)

Subject	Not needed
Measurement Point	Pin (B4) (V SUB) of check point array
Measuring Instrument	Digital voltmeter
Adjustment Address	1E (V SUB)
Specified Value	(Voltage indicated by the imager) ± 0.1 Vdc

Adjusting method:

1) Change the adjustment data at adjustment address 1E using the adjustment remote controller to set the VSUB voltage to (voltage indicated by the imager) ± 0.1 Vdc.
2) Change the adjustment address to store the adjustment data in the memory.



(Example)
When the indication is 3P;
PG CONT voltage specified value=2.0 ± 0.1 Vdc
V SUB voltage specified value=13.5 ± 0.1 Vdc

PG CONT voltage code

Code	Voltage (Vdc)
1	1.0
2	1.5
3	2.0
4	2.5
5	3.0
6	3.5
7	4.0

V SUB voltage code

Code	Voltage (Vdc)
E	9.0
F	9.5
G	10.0
H	10.5
J	11.0
K	11.5
L	12.0
M	12.5
N	13.0
P	13.5
Q	14.0
R	14.5
S	15.0
T	15.5
U	16.0
V	16.5
W	17.0
X	17.5
Y	18.0
Z	18.5

Fig. 1-13.

1-2-5. Hall Adjustment (LD-38 Board)

Subject	All black (cover lens with black cap)
Measurement Point	CN304 on the VC-81 board
Measuring Instrument	AF microprocessor data reading jig
Adjusment Address	1B (Hall Offset)
Adjusting Element	RV701
Specified Value	When iris closed: Minimum value of 01 to 04 When iris open: 3D or 3E

Preparations:

1) Prepare a 1 kΩ resistor for connecting Pin (A11) (IRIS CONT) of the check point array and CAM 5V (Pin ④ of W801).

Adjusting method:

1) Set RV701 to the mechanical center.
2) Set the adjustment address to 25 with the adjustment remote controller, and set the adjustment data to 05. At the same time, connect Pin (A11) of the check point array and CAM 5V using 1 kΩ resistance. (Setting when iris closed)
3) Change the adjustment address to 1B.
4) Change the adjustment data until the indication on the AF microprocessor data reading jig is the minimum value in the range of 01 to 04. (Hall offset adjustment)
5) Change the adjustment address to 25 and set the adjustment data to 07. At the same time, remove the 1 kΩ resistance at Pin (A11) of the check point array. (Setting when iris open)
6) Adjust RV701 until the indication on the AF microcomputer data reading jig is either 3D or 3E. (3D is indicated as 3d .)
7) Repeat steps 2) through 6) until meet the specified values.
8) Set the adjustment address to 25 and set the adjustment data to 00. (Releases adjustment mode)
9) Change the adjustment address to store the adjustment data in the memory.

1-2-6. Iris Adjustment (VC-81 Board)

Subject	Color bar chart standard picture frame
Filter	ND filter 0.4 and 0.1
Measurement Point	Pin (B11) (CCD OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	19 (Iris)
Specified Value	150 ± 10 mVp-p

Adjusting method:

1) Set the adjustment address to 19 with the adjustment remote controller.
2) Without attaching an ND filter, change the adjustment data with the adjustment remote controller to set the IRIS OUT signal level to 150 ± 10 mVp-p.
3) Attach the ND filter 0.5 (0.4+0.1) to the front of the lens and confirm that there is a smooth change in the signal level.
4) Remove the ND filter and confirm that the signal level is 150 ± 10 mVp-p.
5) Repeat 2) through 4) if the specified value is not met.
6) Change the adjustment address to store the adjustment data in the memory.

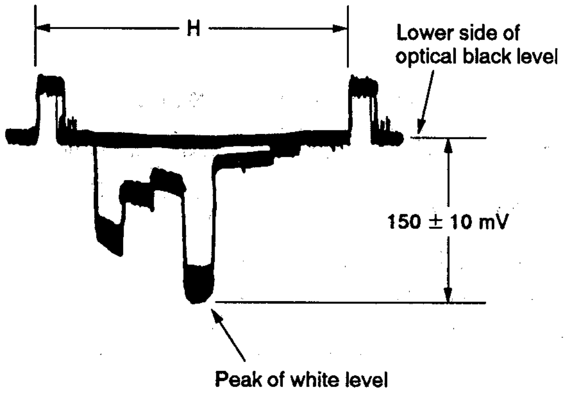


Fig. 1-14.

1-2-7. Hall In/Out Adjustment (VC-81 Board)

Subject	White pattern standard picture frame
Filter	ND filter 0.4 (two) and 0.1 (one)
Measurement Point	CN304
Measuring Instrument	AF microprocessor data reading jig
Adjustment Address	2E (HALL IN) 2D (HALL OUT)

Adjusting method:

1) Cover the lens with the ND filter 0.8 (0.4+0.4).
2) Set the adjustment address to 25 with the adjustment remote controller and set the adjustment data to 09. (Hall in/out threshold mode setting)
3) Read the data indicated on the AF microprocessor data reading jig and set this data to the adjustment address 2E.
4) Remove the ND filter 0.8 and replace it with ND filter 0.5 (0.4+0.1).
5) Read the data indicated on the AF microprocessor data reading jig and set this data to the adjustment address 2D.
6) Change the adjustment address to 25 and set the adjustment data to 00. (Releases hall in/out threshold mode)
7) Change the adjustment address to store the adjustment data in the memory.

1-2-8. AGC Adjustment (VC-81 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin Ⓑ3 (Y (LPF) OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	1D (AGC)
Specified Value	160 ± 5 mVp-p

Adjusting method:

1) Set the adjustment address to 1D using the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the Y (LPF) signal level to 160 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

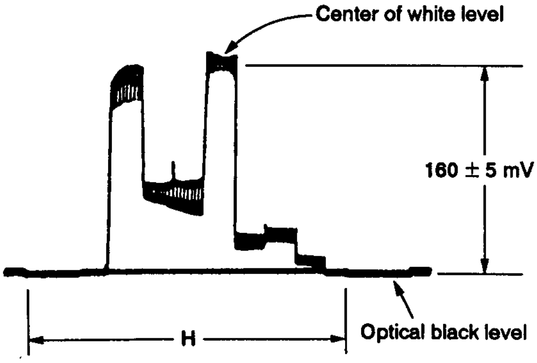


Fig. 1-15.

1-2-9. Y Signal Matrix Adjustment (VC-81 Board)

Subject	Color bar standard picture frame
Measurement Point	1: Pin Ⓐ4 (Y0) of check point array 2: Pin Ⓐ5 (Y1) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	0E (Y1 GAIN)
Specified Value	Y1 signal level=Y0 signal level

Note: Attach 10 kΩ registor to tip of the probe (10:1).

Adjusting method:

1) Connect the oscilloscope to Pin Ⓐ4 of the check point array and measure the Y0 signal level.
2) Connect the oscilloscope to Pin Ⓐ5 of the check point array.
3) Set the adjustment address to 0E using the adjustment remote controller.
4) Change the adjustment data until the Y1 signal level is the same as the Y0 signal level measured in 1).
5) Change the adjustment address to store the adjustment data in the memory.

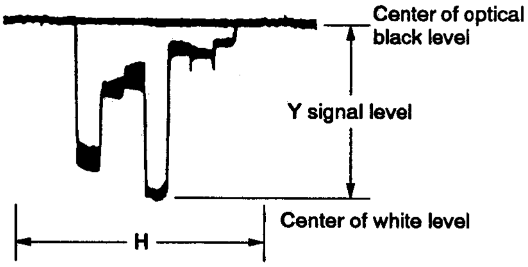


Fig. 1-16.

1-2-10. Chroma Signal Matrix Adjustment (1) (VC-81 Board)

Subject	Color bar standard picture frame
Measurement Point	1: Pin (A6) (C0) of check point array 2: Pin (A7) (C1) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	0D (C1 GAIN)
Specified Value	C1 signal level=C0 signal level

Note: Attach 10 kΩ registor to tip of the probe (10:1).

Adjusting method:

1) Connect the oscilloscope to Pin (A6) of the check point array and measure the C0 signal level. (The C0 signal level is the larger of the CR and CB signal levels.)
2) Connect the oscilloscope to Pin (A7) of the check point array.
3) Set the adjustment address to 0D using the adjustment remote controller.
4) Change the adjustment data until the C1 signal level is the same as the C0 signal level measured in 1).
5) Change the adjustment address to store the adjustment data in the memory.

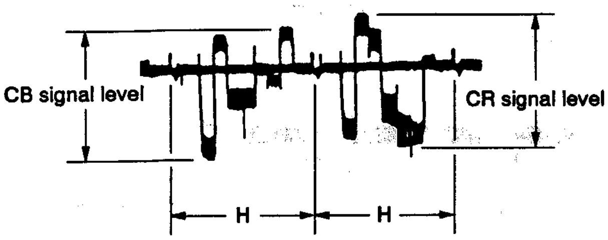


Fig. 1-17. C0 and C1 signal levels

1-2-11. Chroma Signal Matrix Adjustment (2) (VC-81 Board)

Subject	Color bar standard picture frame
Measurement Point	CH1 (X): emitter of Q257 (B–Y) CH2 (Y): emitter of Q255 (R–Y)
Measuring Instrument	Oscilloscope (X-Y mode)
Adjustment Address	18 (C2 GAIN)
Specified Value	Separate color luminance points become one.

Note: Adjustment can be made in the same manner using a vectorscope. (Vectorscope connection terminal: video input/output terminal)

Adjusting method:

1) Set the adjustment address to 18 using the adjustment remote controller.
2) Change the adjustment data so that the two separate color luminance points become one respectively.
3) Change the adjustment address to store the adjustment data in the memory.

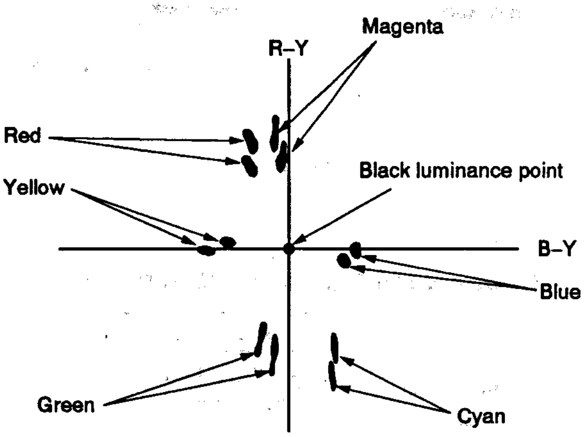


Fig. 1-18.

1-2-12. YH Level Adjustment (VC-81 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin Ⓐ9 (YH) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	17 (YH LEVEL)
Specified Value	900 ± 40 mVp-p

Adjusting method:

1) Set the adjustment address to 17 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the YH signal level to 900 ± 40 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

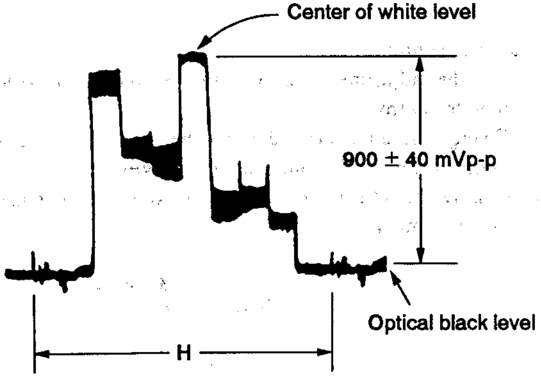


Fig. 1-19.

1-2-13. Sync Level Adjustment (VC-81 Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin Ⓐ8 (CAM Y) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	12 (SYNC LEVEL)
Specified Value	285 ± 5 mVp-p

Adjusting method:

1) Set the adjustment address to 12 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the sync level to 285 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

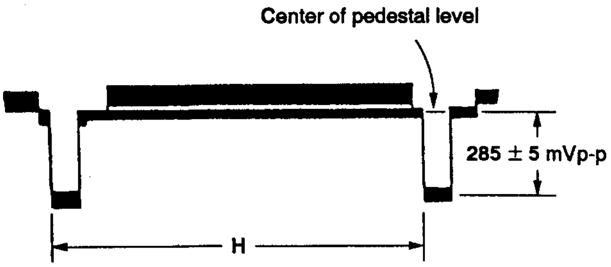


Fig. 1-20.

1-2-14. Setup Adjustment (VC-81 Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin Ⓐ8 (CAM Y) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	13 (SET UP)
Specified Value	30 ± 10 mV

Note: 1) and 2) are steps taken to reduce noise.

Adjusting method:

1) Set the address to 16 (APERTURE) with the adjustment remote controller, and enter 00 as the adjustment data after making a note of the adjustment data for this address.
2) Set the address to 1C (MAX GAIN) with the adjustment remote controller, and enter 00 as the adjustment data after making a note of the adjustment data for this address.
3) Set the adjustment address to 13 with the adjustment remote controller.
4) Change the adjustment data with the adjustment remote controller to set the setup level to 30 ± 10 mV.
5) Set the adjustment address to 16 and enter the adjustment data recorded in 1).
6) Set the adjustment address to 1C and enter the adjustment data recorded in 2).
7) Change the adjustment address to store the adjustment data in the memory.

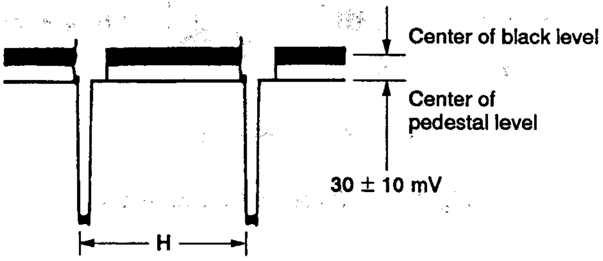


Fig. 1-21.

1-2-15. White Clip Adjustment (VC-81 Board)

Subject	High luminance pattern
Measurement Point	Pin Ⓐ8 (CAM Y) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	14 (WHITE CLIP)
Specified Value	840 ± 20 mV

Adjusting method:

1) Set the adjustment address to 15 with the adjustment remote controller, and make a note of the adjustment data for this address.
2) Set the adjustment data to 40 with the adjustment remote controller.
3) Set the adjustment address to 14 with the adjustment remote controller.
4) Change the adjustment data with the adjustment remote controller to set the white clip level to 840 ± 20 mV.
5) Set the adjustment address to 15 and enter the adjustment data recorded in 1).
6) Change the adjustment address to store the adjustment data in the memory.

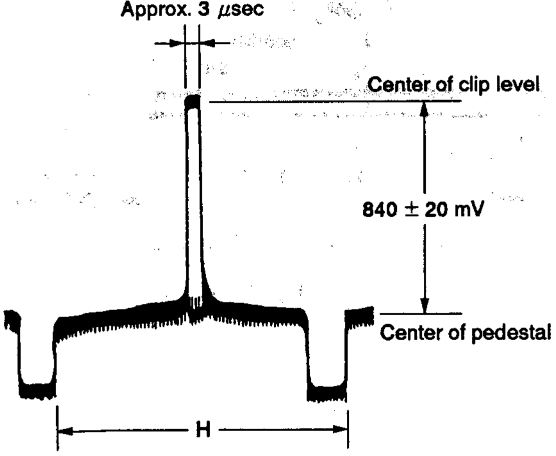


Fig. 1-22.

1-2-16. Y Level Adjustment (VC-81 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin Ⓐ8 (CAM Y) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	15 (Y LEVEL)
Specified Value	660 ± 10 mV

Adjusting method:

1) Set the adjustment address to 14 with the adjustment remote controller, and make a note of the adjustment data for this address.
2) Set the adjustment data to FF with the adjustment remote controller.
3) Set the adjustment address to 15 with the adjustment remote controller.
4) Change the adjustment data with the adjustment remote controller to set the Y signal level to 660 ± 10 mV.
5) Set the adjustment address to 14 and enter the adjustment data recorded in 1).
6) Change the adjustment address to store the adjustment data in the memory.

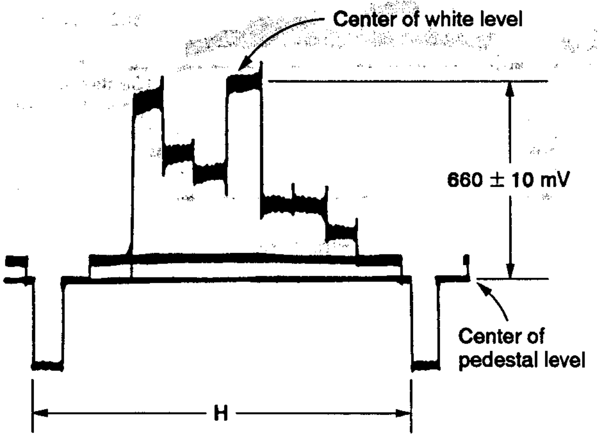


Fig. 1-23.

1-2-17. Max. Gain Adjustment (VC-81 Board)

Subject	Color bar chart standard picture frame
Filter	ND filters 1.0 (two), 0.4 (one), 0.1 (one)
Measurement Point	Pin Ⓐ8 (CAM Y) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	1C (MAX GAIN)
Specified Value	300 ± 10 mV

Adjusting method:

1) Cover the lens with the ND filter 2.5 (1.0+1.0+0.4+0.1).
2) Set the adjustment address to 1C with the adjustment remote controller.
3) Change the adjustment data with the adjustment remote controller to set the Y signal level to 300 ± 10 mV.
4) Change the adjustment address to store the adjustment data in the memory.

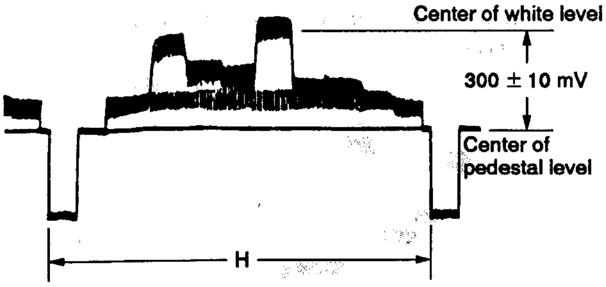


Fig. 1-24.

1-2-18. Aperture Adjustment (VC-81 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin Ⓐ8 (CAM Y) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	16 (APERTURE)
Specified Value	280 ± 10 mV

Adjusting method:

1) Set the adjustment address to 16 with the adjustment remote controller.
2) Focus the camera and set the aperture level (lower peak between green and white) to maximum.
3) Change the adjustment data to set the lower peak between green and white to 280 ± 10 mV above the pedestal level.
4) Change the adjustment address to store the adjustment data in the memory.

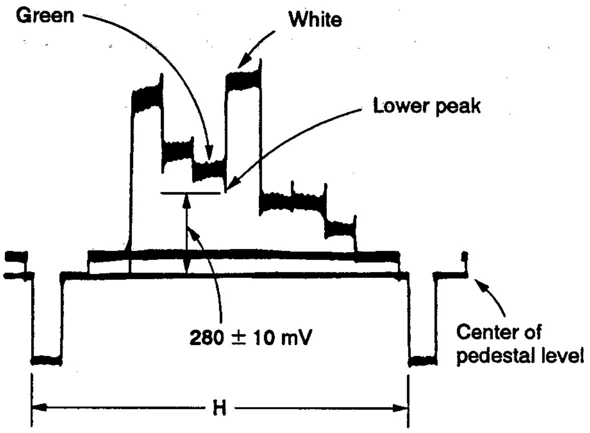


Fig. 1-25.

1-2-19. Chroma Level Adjustment (VC-81 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin Ⓐ1 (G OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	09 (C LEVEL)
Specified Value	320 ± 20 mVp-p

Connections:
1) Connect Pin (B7) (OFFSET CONT) of the check point array to GND using a jumper wire.

Adjusting method:
1) Set the adjustment address to 09 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the G OUT signal level to 320 ± 20 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

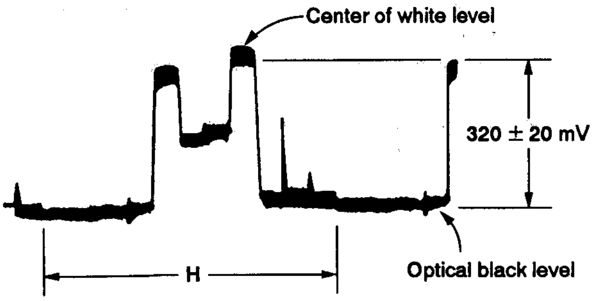


Fig. 1-26.

1-2-20. Burst Level Adjustment (VC-81 Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin (A10) (CAM C) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	10 (BURST LEVEL)
Specified Value	190 ± 5 mVp-p

Adjusting method:
1) Set the adjustment address to 10 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the burst level to 190 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

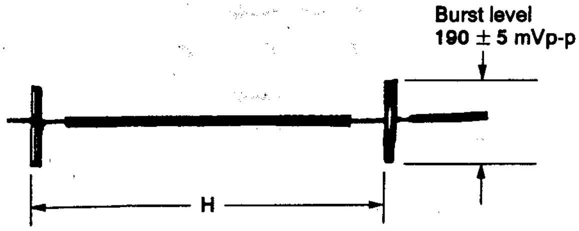


Fig. 1-27.

1-2-21. Indoor White Balance Adjustment (Method Using Vectorscope)

Subject	Color bar chart standard picture frame
Measurement Point	Video input/output terminals
Measuring Instrument	Vectorscope
Adjustment Address	0B (R GAIN) 0C (B GAIN)
Specified Value	The center of the white luminance point is within a circle with a diameter of 1 mm centered around the origin.

Adjusting method:
1) Set the adjustment address to 0B with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to match the white luminance point with the origin.
3) Set the adjustment address to 0C.
4) Change the adjustment data to match the white luminance point with the origin.
5) Repeat steps 1) through 4).
6) Change the adjustment address to store the adjustment data in the memory.
(The adjustment data should be 60 to FF)

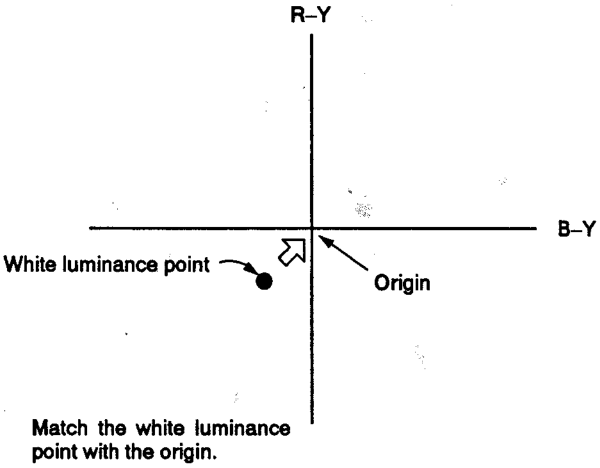


Fig. 1-28.

1-2-22. Indoor White Balance Adjustment (Method Using Oscilloscope) (VC-81 Board)

Subject	Color bar chart standard picture frame
Measurement Point	CH1 (X): emitter of Q257 (B–Y) CH2 (Y): emitter of Q255 (R–Y)
Measuring Instrument	Oscilloscope (X-Y mode)
Adjustment Address	0B (R GAIN) 0C (B GAIN)
Specified Value	Move the white luminance point to the black luminance point.

Adjusting method:

1) Set the adjustment address to 0B with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to match the white luminance point with the black luminance point.
3) Set the adjustment address to 0C.
4) Change the adjustment data to match the white luminance point with the black luminance point.
5) Repeat steps 1) through 4).
6) Change the adjustment address to store the adjustment data in the memory.
   (The adjustment data should be 60 to FF)

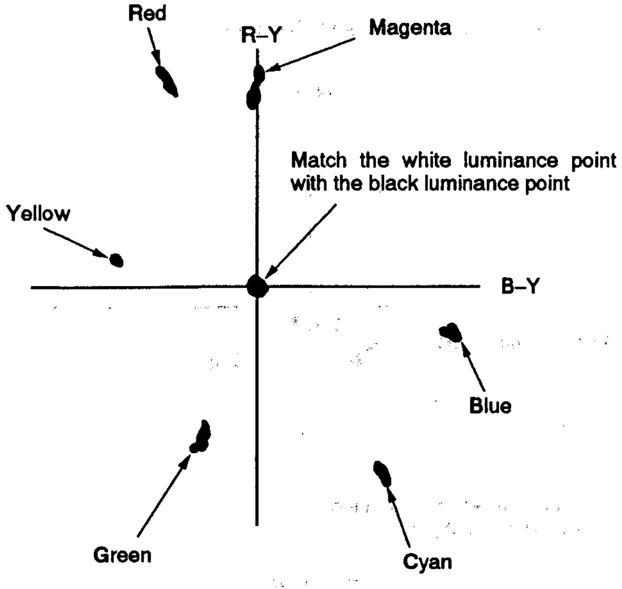

Red
R–Y
Magenta
Match the white luminance point with the black luminance point
Yellow
B–Y
Blue
Green
Cyan

Fig. 1-29.

1-2-23. Color Reproduction Adjustment (Method Using Vectorscope)

Subject	Color bar chart standard picture frame
Measurement Point	Video input/output terminals
Measuring Instrument	Vectorscope
Adjustment Address	05 (R–Y GAIN) 06 (B–Y GAIN) 07 (R–Y HUE) 08 (B–Y HUE)
Specified Value	All color luminance points are within color reproduction frame.

Note: Confirm that "Burst Level Adjustment" and "Indoor White Balance Adjustment" have been completed.

Adjusting method:

1) Adjust the phase and gain of the vectorscope to set the burst luminance points to the designated position on the color reproduction frame.
2) Change the adjustment data at the various adjustment addresses using the adjustment remote controller until all color luminance points are within the color reproduction frame.
   (The adjustment data should be 40 to FF)
3) Change the adjustment address to store the adjustment data in the memory.

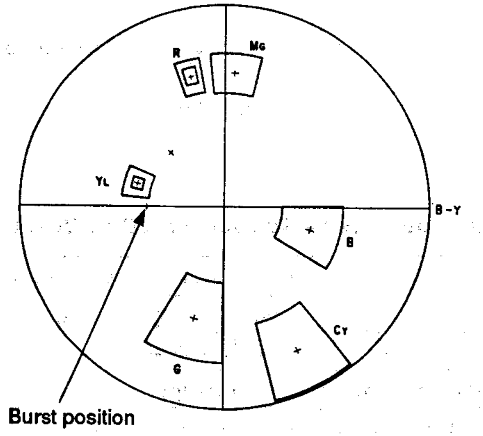


Fig. 1-30.

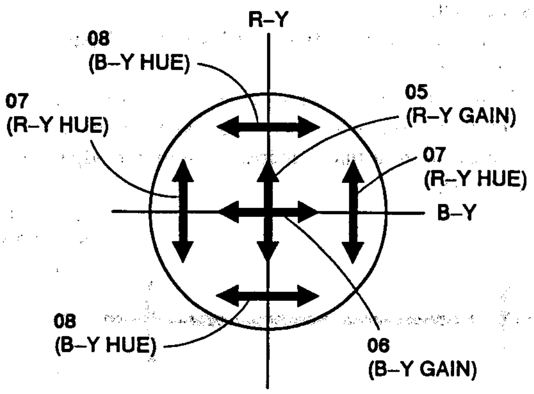


Fig. 1-31. Adjustment address and direction of luminance point movement

1-2-24. Color Reproduction Adjustment (Method Using Oscilloscope)

1. Gain adjustment (VC-81 board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (A10) (CAM C) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	05 (R–Y GAIN) 06 (B–Y GAIN)
Specified Value	Red level: 330 ± 20 mVp-p Yellow level: 220 ± 15 mVp-p

Note: Confirm that "Indoor White Balance Adjustment" is completed.

Adjusting method:

1) Set the adjustment address to 06 with the adjustment remote controller and set the adjustment data to B0.
2) Set the adjustment address to 07 and set the adjustment data to C0.
3) Set the adjustment address to 08 and set the adjustment data to C0.
4) Set the adjustment address to 05 and change the adjustment data to set the chroma signal "red" level to 330 ± 20 mVp-p.
5) Set the adjustment address to 06 and change the adjustment data to set the chroma signal "yellow" level to 220 ± 15 mVp-p.
   (The adjustment data should be 40 to FF)
6) Repeat steps 4) and 5).
7) Change the adjustment address to store the adjustment data in the memory.
8) Perform "Hue Adjustment".

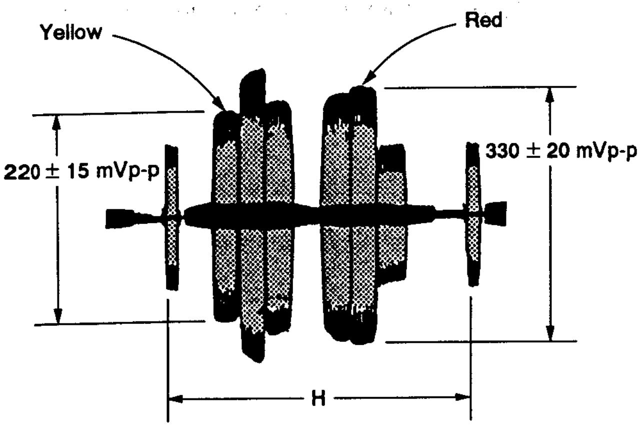


Fig. 1-32.

2. Hue adjustment (VC-81 board)

Subject	Color bar chart standard picture frame
Measurement Point	CH1 (X): emitter of Q257 (B–Y) CH2 (Y): emitter of Q255 (R–Y)
Measuring Instrument	Oscilloscope (X-Y mode)
Adjustment Address	07 (R–Y HUE) 08 (B–Y HUE)
Specified Value	Various color luminance points within color reproduction frame.

Note: Make sure that "Indoor White Balance Adjustment" is completed.

Adjusting method:

1) Match the "black" luminance point on the oscilloscope with the origin of the color reproduction frame.
2) Change the adjustment data at adjustment addresses 07 and 08 with the adjustment remote controller to bring the various color luminance points into the color reproduction frame.
3) Check the hue reproduced on the monitor TV and fine adjust the adjustment data at adjustment addresses 07 and 08 if necessary.
   (The adjustment data should be 40 to FF)
4) Set the oscilloscope to the normal mode and connect it to Pin (A10) of the check point array and confirm that the specified value of "1. Gain Adjustment" is satisfied. Change the data at the adjustment address 05 and 06 if the specified value is not met.
5) Change the adjustment address to store the adjustment data in the memory.

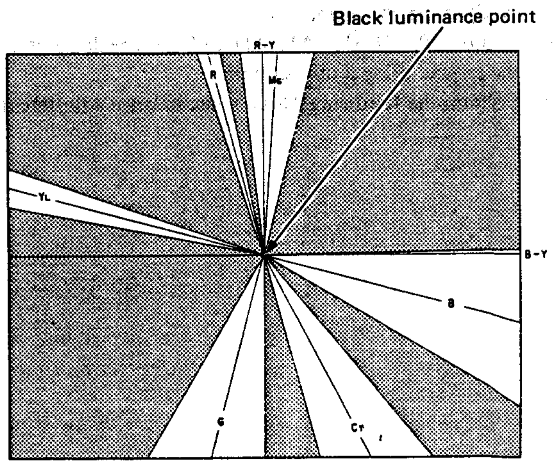


Fig. 1-33.

1-2-25. Auto White Balance Adjustment

Note: Be sure to first perform "Preset Adjustment" followed by "Auto White Balance Adjustment".

1. Preset adjustment (VC-81 board)

Subject	White pattern standard picture frame

Note: 1) Perform preset adjustment after supplying power to the unit for at least 30 seconds.
2) When performing preset adjustment again, once OFF/ON the power.

Preparations:

1) Prepare a 1 kΩ resistor for connecting Pin (B5) (AW ADJ) of the check point array and Pin ④ (CAM 5V) of W801.

Adjusting method:

1) Connect the Pin (B6) (CAM ADJ) of the check point array to the ground with a jumper wire after turning the power OFF and ON. Wait at least 30 seconds.
2) Select adjustment address 75 (AWB MODE) and set the adjustment data to E0.
3) Change the adjustment address to store the adjustment data in the memory.
4) Remove the jumper wire between Pin (B6) (CAM ADJ) of the check point array and the ground.
5) Connect Pin (B5) (AWB ADJ) of the check point array and Pin ④ of W801 (CAM 5V) with a 1 kΩ resistor.
6) Connect Pin (B6) (CAM ADJ) of the check point array to the ground using a jumper wire.
7) Confirm that the data indicated (address 01) on the adjustment remote controller is changed.
8) Remove the jumper wire connected to Pin (B6) (CAM ADJ) of the check point array after elapse of one second or more.
9) Remove the 1 kΩ resistor connected to Pin (B5) (AWB ADJ) of the check point array.
10) Connect Pin (B6) (CAM ADJ) of the check point array to the ground using a jumper wire.
11) Perform the following "Auto white balance adjustment".

2. Auto white balance adjustment (VC-81 board)

Note: Be sure to perform "Preset adjustment" before this adjustment.

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measuring Instrument	Oscilloscope (X-Y Mode)[Note 1]
Measurement Point	CH1 (X): emitter of Q257 (B–Y) CH2 (Y): emitter of Q255 (R–Y)
Adjustment Address	01 (DELTA R) 02 (DELTA B) 3F (START R) 40 (START B) 44 (TOP SLP B) 4B (TOP UP) 4C (TOP DWN) 54 (B UP LMT) 55 (IN BTOP) 56 (IN BMAX) 57 (OUT BMIN) 58 (OUT BDWN) 5A (R OUTDOOR) 5B (B OUTDOOR) 5C (Ra) 5D (Rb) 5E (Rc) 5F (Ba) 60 (Bb) 61 (Bc) 62 (R/B TOP) 63 (R/B MDL) 64 (R/B DWN) 65 (B/R TOP) 66 (B/R MDL) 67 (B/R DWN)
Specified Value	Line up the white luminance point with the black luminance point.

Note: 1) Adjustment can be made in the same manner using a vectorscope.
Connect to VIDEO IN/OUT terminal when the vectorscope is used.
2) All calculations in this section are made in decimal.

Adjusting method:

- Outdoor preset adjustment

1) Select the adjustment address 75 (AWB MODE) with the adjustment remote controller and set the adjustment data to 10.
2) Cover the lens with C14 filter.
3) Change the adjustment data at the adjustment addresses 01 and 02 alternately with the adjustment remote controller to match the white luminance point with the black luminance point. (Match the white luminance point with the origin when using the vectorscope.)
   The adjustment data of adjustment address 01 will be C_1 and the adjustment data of adjustment address 02 will be C_2.

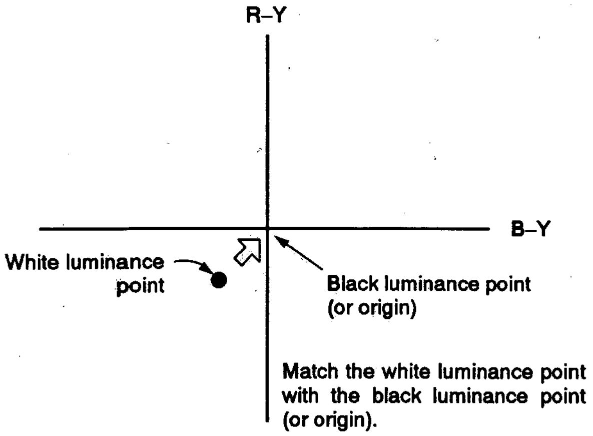

R–Y
B–Y
White luminance point
Black luminance point (or origin)
Match the white luminance point with the black luminance point (or origin).

Fig. 1-34.

- Adjustment data input with the tables

4) When C_2 value is from 3F through 55, obtain the adjustment data at the adjustment addresses 40, 54 to 58, 5B, 5F, 60 and 61 by Table 1-7., and enter the data into each address with the adjustment remote controller.
5) When C_1 value is from 25 through 30, obtain the adjustment data at the adjustment addresses 3F, 5A, 5C, 5D and 5E with Table 1-8., and enter the data into each address with the adjustment remote controller.
6) When C_1 value is from 25 through 30 and C_2 value is from 3F through 55, obtain the adjustment data of the adjustment addresses 44, 4B, 4C and 62 to 67 with Table 1-9., and enter the data into each address with the adjustment remote controller.
7) When the data input to all adjustment addresses with the Tables has completed in 4) through 6), perform the adjustments after 15). If there is the adjustment address in which the data input is impossible, perform the following "Adjustment data input by calculation".

- Adjustment data input by calculation

8) Convert the adjustment data C_1 to decimal to obtain C_1', and the adjustment data C_2 to decimal to obtain C_2'.
   (See Table 1-5. Hexadecimal — decimal conversion table)
9) Obtain R′ and B′ by the following formula.
   $R' = C_1' + 2$
   $B' = C_2' + 4$
10) Convert R′ to hexadecimal and enter it into the adjustment address 5A.
11) Convert B′ to hexadecimal and enter it into the adjustment address 5B.
12) Obtain X′ and Y′ by the following formula.
    $X' = 64 - R'$
    $Y' = B' - 48$
13) Obtain the adjustment data (decimal) by the following formula, convert to hexadecimal and enter the data into each adjustment address. (When converting, if there is a fraction under decimal, round it off.) Still, take down each adjustment data (decimal).
    Address 54
    $D_{54}' = Y' \times 2 + 48$
    Address 55
    $D_{55}' = B'$
    Address 56
    $D_{56}' = Y' \times 0.84 + 48$
    Address 57
    $D_{57}' = D_{56}'$
    Address 58
    $D_{58}' = Y' \times 0.3 + 48$
    Address 5C
    $D_{5C}' = 64 - X' \times 1.12$
    Address 5D
    $D_{5D}' = R'$
    Address 5E
    $D_{5E}' = 64 - X' \times 0.593$
    Address 5F
    $D_{5F}' = Y' \times 1.34 + 48$
    Address 60
    $D_{60}' = B'$
    Address 61
    $D_{61}' = Y' \times 0.467 + 48$

14) Obtain the adjustment data (decimal) by the following formula, convert to hexadecimal and enter the data into each adjustment address. (Round fractions off.)

Address 62

$D_{62}' = (D_{5D}' - D_{5C}') \times 64/(D_{5F}' - D_{60}')$

Address 63

$D_{63}' = (D_{5E}' - D_{5D}') \times 64/(D_{60}' - D_{61}')$

Address 64

$D_{64}' = (64 - D_{5E}') \times 64/(D_{61}' - 48)$

Address 65

$D_{65}' = (D_{5F}' - D_{60}') \times 16/(D_{5D}' - D_{5C}')$

Address 66

$D_{66}' = (D_{60}' - D_{61}') \times 16/(D_{5E}' - D_{5D}')$

Address 67

$D_{67}' = (D_{61}' - 48) \times 16/(64 - D_{5E}')$

Address 44

$D_{44}' = D_{62}' \times 1.8$

Address 4B

$D_{4B}' = D_{5C}' \times 2 + 16 + (D_{5F}' \times D_{44}')/64$

Address 4C

$D_{4C}' = D_{5C}' \times 2 - 14 + (D_{5F}' \times D_{44}')/64$

Address 3F

$D_{3F}' = D_{5E}'$

Address 40

$D_{40}' = D_{61}'$

- **Auto white balance adjustment**

15) Check the C14 filter is covered with the lens.
16) Select the adjustment address 75, and enter the adjustment data F0.
17) Change alternately the adjustment data at the adjustment addresses 01 and 02 with the adjustment remote controller to match the white luminance point with the black luminance point.
(Match the white luminance with the origin when using the vectorscope.)
18) Select the adjustment address 75, and enter the adjustment data 00.
19) Change the adjustment address to store the adjustment data in the memory.

(Example)

If C_2 is 49, the Ⓐ line is the required adjustment data.

C_2	Adjustment address										
	40	**54**	**55**	**56**	**57**	**58**	**5B**	**5F**	**60**	**61**	
3F	39	56	43	40	40	36	43	49	43	39	
40	39	58	44	41	41	36	44	4B	44	39	
41	3A	5A	45	42	42	36	45	4C	45	3A	
42	3A	5C	46	42	42	37	46	4D	46	3A	
43	3B	5E	47	43	43	37	47	4F	47	3B	
44	3B	60	48	44	44	37	48	50	48	3B	
45	3C	62	49	45	45	38	49	52	49	3C	
46	3C	64	4A	46	46	38	4A	53	4A	3C	
47	3D	66	4B	47	47	38	4B	54	4B	3D	
48	3D	68	4C	48	48	38	4C	56	4C	3D	
49	3E	6A	4D	48	48	39	4D	57	4D	3E	←Ⓐ
4A	3E	6C	4E	49	49	39	4E	58	4E	3E	
4B	3E	6E	4F	4A	4A	39	4F	5A	4F	3E	
4C	3F	70	50	4B	4B	3A	50	5B	50	3F	
4D	3F	72	51	4C	4C	3A	51	5C	51	3F	
4E	40	74	52	4D	4D	3A	52	5E	52	40	
4F	40	76	53	4D	4D	3B	53	5F	53	40	
50	41	78	54	4E	4E	3B	54	60	54	41	
51	41	7A	55	4F	4F	3B	55	62	55	41	
52	42	7C	56	50	50	3B	56	63	56	42	
53	42	7E	57	51	51	3C	57	64	57	42	
54	43	80	58	52	52	3C	58	66	58	43	
55	43	82	59	52	52	3C	59	67	59	43	

Table 1-7.

C_1	Adjustment address				
	3F	**5A**	**5C**	**5D**	**5E**
25	31	27	24	27	31
26	32	28	25	28	32
27	32	29	26	29	32
28	33	2A	27	2A	33
29	34	2B	28	2B	34
2A	34	2C	2A	2C	34
2B	35	2D	2B	2D	35
2C	35	2E	2C	2E	35
2D	36	2F	2D	2F	36
2E	37	30	2E	30	37
2F	37	31	2F	31	37
30	38	32	30	32	38

Table 1-8.

C1	C2	Adjustment address								
		44	4B	4C	62	63	64	65	66	67
25	3F	3A	9A	7C	20	40	6B	20	10	A
	40	31	92	74	1B	3A	6B	25	12	A
	41	31	93	75	1B	3A	60	25	12	B
	42	31	93	75	1B	35	60	25	13	B
	43	2B	8D	6F	18	35	57	2B	13	C
	44	2B	8E	70	18	31	57	2B	15	C
	45	26	89	6B	15	31	50	30	15	D
	46	26	8A	6C	15	2E	50	30	16	D
	47	26	8A	6C	15	2E	4A	30	16	E
	48	23	86	68	13	2B	4A	35	18	E
	49	23	87	69	13	2B	45	35	18	F
	4A	23	87	69	13	28	45	35	1A	F
	4B	1F	84	66	11	26	45	3B	1B	F
	4C	1F	85	67	11	26	40	3B	1B	10
	4D	1F	85	67	11	24	40	3B	1D	10
	4E	1D	82	64	10	24	3C	40	1D	11
	4F	1D	83	65	10	22	3C	40	1E	11
	50	1D	83	65	10	22	38	40	1E	12
	51	1B	81	63	F	20	38	45	20	12
	52	1B	81	63	F	20	35	45	20	13
	53	1B	81	63	F	1E	35	45	22	13
	54	19	7F	61	E	1E	33	4B	22	14
	55	19	80	62	E	1D	33	4B	23	14
26	3F	3A	9C	7E	20	40	64	20	10	A
	40	31	94	76	1B	3A	64	25	12	A
	41	31	95	77	1B	3A	5A	25	12	B
	42	31	95	77	1B	35	5A	25	13	B
	43	2B	8F	71	18	35	51	2B	13	D
	44	2B	90	72	18	31	51	2B	15	D
	45	26	8B	6D	15	31	4B	30	15	E
	46	26	8C	6E	15	2E	4B	30	16	E
	47	26	8C	6E	15	2E	45	30	16	F
	48	23	88	6A	13	2B	45	35	18	F
	49	23	89	6B	13	2B	40	35	18	10
	4A	23	89	6B	13	28	40	35	1A	10
	4B	1F	86	68	11	26	40	3B	1B	10
	4C	1F	87	69	11	26	3C	3B	1B	11
	4D	1F	87	69	11	24	3C	3B	1D	11
	4E	1D	84	66	10	24	38	40	1D	12
	4F	1D	85	67	10	22	38	40	1E	12
	50	1D	85	67	10	22	35	40	1E	13
	51	1B	83	65	F	20	35	45	20	13
	52	1B	83	65	F	20	32	45	20	15
	53	1B	83	65	F	1E	32	45	22	15
	54	19	81	63	E	1E	2F	4B	22	16
	55	19	82	64	E	1D	2F	4B	23	16
27	3F	3A	9E	80	20	3A	64	20	12	A
	40	31	96	78	1B	34	64	25	14	A
	41	31	97	79	1B	34	5A	25	14	B
	42	31	97	79	1B	30	5A	25	15	B
	43	2B	91	73	18	30	51	2B	15	D
	44	2B	92	74	18	2C	51	2B	17	D
	45	26	8D	6F	15	2C	4B	30	17	E
	46	26	8E	70	15	29	4B	30	19	E
	47	26	8E	70	15	29	45	30	19	F
	48	23	8A	6C	13	26	45	35	1B	F
	49	23	8B	6D	13	26	40	35	1B	10
	4A	23	8B	6D	13	24	40	35	1C	10
	4B	1F	88	6A	11	22	40	3B	1E	10
	4C	1F	89	6B	11	22	3C	3B	1E	11
	4D	1F	89	6B	11	20	3C	3B	20	11
	4E	1D	86	68	10	20	38	40	20	12
	4F	1D	87	69	10	1E	38	40	22	12
	50	1D	87	69	10	1E	35	40	22	13
	51	1B	85	67	F	1D	35	45	24	13
	52	1B	85	67	F	1D	32	45	24	15
	53	1B	85	67	F	1B	32	45	25	15
	54	19	83	65	E	1B	2F	4B	25	16
	55	19	84	66	E	1A	2F	4B	27	16
28	3F	3A	A0	82	20	3A	5C	20	12	B
	40	31	98	7A	1B	34	5C	25	14	B
	41	31	99	7B	1B	34	53	25	14	C
	42	31	99	7B	1B	30	53	25	15	C
	43	2B	93	75	18	30	4C	2B	15	E
	44	2B	94	76	18	2C	4C	2B	17	E
	45	26	8F	71	15	2C	45	30	17	F
	46	26	90	72	15	29	45	30	19	F
	47	26	90	72	15	29	40	30	19	10
	48	23	8C	6E	13	26	40	35	1B	10
	49	23	8D	6F	13	26	3B	35	1B	11
	4A	23	8D	6F	13	24	3B	35	1C	11
	4B	1F	8A	6C	11	22	3B	3B	1E	11
	4C	1F	8B	6D	11	22	37	3B	1E	12
	4D	1F	8B	6D	11	20	37	3B	20	12
	4E	1D	88	6A	10	20	34	40	20	14
	4F	1D	89	6B	10	1E	34	40	22	14
	50	1D	89	6B	10	1E	31	40	22	15
	51	1B	87	69	F	1D	31	45	24	15
	52	1B	87	69	F	1D	2E	45	24	16
	53	1B	87	69	F	1B	2E	45	25	16
	54	19	85	67	E	1B	2C	4B	25	17
	55	19	86	68	E	1A	2C	4B	27	17
29	3F	3A	A2	84	20	3A	55	20	12	C
	40	31	9A	7C	1B	34	55	25	14	C
	41	31	9B	7D	1B	34	4D	25	14	D
	42	31	9B	7D	1B	30	4D	25	15	D
	43	2B	95	77	18	30	46	2B	15	F
	44	2B	96	78	18	2C	46	2B	17	F
	45	26	91	73	15	2C	40	30	17	10
	46	26	92	74	15	29	40	30	19	10
	47	26	92	74	15	29	3B	30	19	11
	48	23	3E	70	13	26	3B	35	1B	11
	49	23	8F	71	13	26	37	35	1B	13
	4A	23	8F	71	13	24	37	35	1C	13
	4B	1F	8C	6E	11	22	37	3B	1E	13
	4C	1F	8D	6F	11	22	33	3B	1E	14
	4D	1F	8D	6F	11	20	33	3B	20	14
	4E	1D	8A	6C	10	20	30	40	20	15
	4F	1D	8B	6D	10	1E	30	40	22	15
	50	1D	8B	6D	10	1E	2D	40	22	17
	51	1B	89	6B	F	1D	2D	45	24	17
	52	1B	89	6B	F	1D	2B	45	24	18
	53	1B	89	6B	F	1B	2B	45	25	18
	54	19	87	69	E	1B	28	4B	25	19
	55	19	88	6A	E	1A	28	4B	27	19
2A	3F	26	90	72	15	33	55	30	14	C
	40	21	8B	6D	12	2F	55	38	16	C
	41	21	8B	6D	12	2F	4D	38	16	D
	42	21	8C	6E	12	2B	4D	38	18	D
	43	1D	87	69	10	2B	46	40	18	F
	44	1D	88	6A	10	27	46	40	1A	F
	45	1A	85	67	E	27	40	48	1A	10
	46	1A	85	67	E	25	40	48	1C	10
	47	1A	86	68	E	25	3B	48	1C	11
	48	17	83	65	D	22	3B	50	1E	11
	49	17	83	65	D	22	37	50	1E	13
	4A	17	84	66	D	20	37	50	20	13
	4B	15	81	63	C	1E	37	58	22	13
	4C	15	82	64	C	1E	33	58	22	14
	4D	15	82	64	C	1C	33	58	24	14
	4E	13	80	62	B	1C	30	60	24	15
	4F	13	80	62	B	1B	30	60	26	15
	50	13	81	63	B	1B	2D	60	26	17
	51	12	7F	61	A	1A	2D	68	28	17
	52	12	7F	61	A	1A	2B	68	28	18
	53	12	80	62	A	18	2B	68	2A	18
	54	10	7E	60	9	18	28	70	2A	19
	55	10	7E	60	9	17	28	70	2C	19
2B	3F	26	92	74	15	33	4E	30	14	D
	40	21	8D	6F	12	2F	4E	38	16	D
	41	21	8D	6F	12	2F	46	38	16	F
	42	21	8E	70	12	2B	46	38	18	F
	43	1D	89	6B	10	2B	40	40	18	10
	44	1D	8A	6C	10	27	40	40	1A	10
	45	1A	87	69	E	27	3B	48	1A	11
	46	1A	87	69	E	25	3B	48	1C	11
	47	1A	88	6A	E	25	36	48	1C	13
	48	17	85	67	D	22	36	50	1E	13
	49	17	85	67	D	22	32	50	1E	14
	4A	17	86	68	D	20	32	50	20	14
	4B	15	83	65	C	1E	32	58	22	14
	4C	15	84	66	C	1E	2F	58	22	16
	4D	15	84	66	C	1C	2F	58	24	16
	4E	13	82	64	B	1C	2C	60	24	17
	4F	13	83	64	B	1B	2C	60	26	17
	50	13	83	65	B	1B	29	60	26	19
	51	12	81	63	A	1A	29	68	28	19
	52	12	81	63	A	1A	27	68	28	1A
	53	12	82	64	A	18	27	68	2A	1A
	54	10	80	62	9	18	25	70	2A	1C
	55	10	80	62	9	17	25	70	2C	1C
2C	3F	26	94	76	15	2D	4E	30	17	D
	40	21	8F	71	12	29	4E	38	19	D
	41	21	8F	71	12	29	46	38	19	F
	42	21	90	72	12	25	46	38	1B	F
	43	1D	8B	6D	10	25	40	40	1B	10
	44	1D	8C	6E	10	22	40	40	1E	10
	45	1A	89	6B	E	22	3B	48	1E	11
	46	1A	89	6B	E	20	3B	48	20	11
	47	1A	8A	6C	E	20	36	48	20	13
	48	17	87	69	D	1E	36	50	22	13
	49	17	87	69	D	1E	32	50	22	14
	4A	17	88	6A	D	1C	32	50	25	14
	4B	15	85	67	C	1A	32	58	27	14
	4C	15	86	68	C	1A	2F	58	27	16
	4D	15	86	68	C	19	2F	58	29	16
	4E	13	84	66	B	19	2C	60	29	17
	4F	13	84	66	B	18	2C	60	2B	17
	50	13	85	67	B	18	29	60	2B	19
	51	12	83	65	A	16	29	68	2E	19
	52	12	83	65	A	16	27	68	2E	1A
	53	12	84	66	A	15	27	68	30	1A
	54	10	82	64	9	15	25	70	30	1C
	55	10	82	64	9	14	25	70	32	1C
2D	3F	26	96	78	15	2D	47	30	17	E
	40	21	91	73	12	29	47	38	19	E
	41	21	91	73	12	29	40	38	19	10
	42	21	92	74	12	25	40	38	1B	10
	43	1D	8D	6F	10	25	3A	40	1B	12
	44	1D	8E	70	10	22	3A	40	1E	12
	45	1A	8B	6D	E	22	35	48	1E	13
	46	1A	8B	6D	E	20	35	48	20	13
	47	1A	8C	6E	E	20	31	48	20	15
	48	17	89	6B	D	1E	31	50	22	15
	49	17	89	6B	D	1E	2E	50	22	16
	4A	17	8A	6C	D	1C	2E	50	25	16
	4B	15	87	69	C	1A	2E	58	27	16
	4C	15	88	6A	C	1A	2B	58	27	18
	4D	15	88	6A	C	19	2B	58	29	18
	4E	13	86	68	B	19	28	60	29	1A
	4F	13	86	68	B	18	28	60	2B	1A
	50	13	87	69	B	18	26	60	2B	1B
	51	12	85	67	A	16	26	68	2E	1B
	52	12	85	67	A	16	24	68	2E	1D
	53	12	86	68	A	15	24	68	30	1D
	54	10	84	66	9	15	22	70	30	1E
	55	10	84	66	9	14	22	70	32	1E

Table 1-9. (1)

C1	C2	Adjustment address								
		44	4B	4C	62	63	64	65	66	67
2E	3F	26	98	7A	15	2D	40	30	17	10
	40	21	93	75	12	29	40	38	19	10
	41	21	93	75	12	29	3A	38	19	12
	42	21	94	76	12	25	3A	38	1B	12
	43	1D	8F	71	10	25	34	40	1B	14
	44	1D	90	72	10	22	34	40	1E	14
	45	1A	8D	6F	E	22	30	48	1E	15
	46	1A	8D	6F	E	20	30	48	20	15
	47	1A	8E	70	E	20	2C	48	20	17
	48	17	8B	6D	D	1E	2C	50	22	17
	49	17	8B	6D	D	1E	29	50	22	19
	4A	17	8C	6E	D	1C	29	50	25	19
	4B	15	89	6B	C	1A	29	58	27	19
	4C	15	8A	6C	C	1A	26	58	27	1B
	4D	15	8A	6C	C	19	26	58	29	1B
	4E	13	88	6A	B	19	24	60	29	1C
	4F	13	88	6A	B	18	24	60	2B	1C
	50	13	89	6B	B	18	22	60	2B	1E
	51	12	87	69	A	16	22	68	2E	1E
	52	12	87	69	A	16	20	68	2E	20
	53	12	88	6A	A	15	20	68	30	20
	54	10	86	68	9	15	1E	70	30	22
	55	10	86	68	9	14	1E	70	32	22
2F	3F	26	9A	7C	15	26	40	30	1B	10
	40	21	95	77	12	23	40	38	1D	10
	41	21	95	77	12	23	3A	38	1D	12
	42	21	96	78	12	20	3A	38	20	12
	43	1D	91	73	10	20	34	40	20	14
	44	1D	92	74	10	1E	34	40	23	14
	45	1A	8F	71	E	1E	30	48	23	15
	46	1A	8F	71	E	1B	30	48	25	15
	47	1A	90	72	E	1B	2C	48	25	17
	48	17	8D	6F	D	1A	2C	50	28	17
	49	17	8D	6F	D	1A	29	50	28	19
	4A	17	8E	70	D	18	29	50	2B	19
	4B	15	8B	6D	C	17	29	58	2D	19
	4C	15	8C	6E	C	17	26	58	2D	1B
	4D	15	8C	6E	C	15	26	58	30	1B
	4E	13	8A	6C	B	15	24	60	30	1C
	4F	13	8A	6C	B	14	24	60	33	1C
	50	13	8B	6D	B	14	22	60	33	1E
	51	12	89	6B	A	13	22	68	35	1E
	52	12	89	6B	A	13	20	68	35	20
	53	12	8A	6C	A	12	20	68	38	20
	54	10	88	6A	9	12	1E	70	38	22
	55	10	88	6A	9	11	1E	70	3B	22
30	3F	26	9C	7E	15	26	39	30	1B	12
	40	21	97	79	12	23	39	38	1D	12
	41	21	97	79	12	23	33	38	1D	14
	42	21	98	7A	12	20	33	38	20	14
	43	1D	93	75	10	20	2F	40	20	16
	44	1D	94	76	10	1E	2F	40	23	16
	45	1A	91	73	E	1E	2B	48	23	18
	46	1A	91	73	E	1B	2B	48	25	18
	47	1A	92	74	E	1B	27	48	25	1A
	48	17	8F	71	D	1A	27	50	28	1A
	49	17	8F	71	D	1A	25	50	28	1C
	4A	17	90	72	D	18	25	50	2B	1C
	4B	15	8D	6F	C	17	25	58	2D	1C
	4C	15	8E	70	C	17	22	58	2D	1E
	4D	15	8E	70	C	15	22	58	30	1E
	4E	13	8C	6E	B	15	20	60	30	20
	4F	13	8C	6E	B	14	20	60	33	20
	50	13	8D	6F	B	14	1E	60	33	22
	51	12	8B	6D	A	13	1E	68	35	22
	52	12	8B	6D	A	13	1C	68	35	24
	53	12	8C	6E	A	12	1C	68	38	24
	54	10	8A	6C	9	12	1B	70	38	26
	55	10	8A	6C	9	11	1B	70	3B	26

Table 1-9. (2)

1-2-26. Outdoor White Balance Check (VC-81 Board)

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	When vectorscope used: video input/output terminals When oscilloscope used: CH1 (X): emitter of Q257 (B–Y) CH2 (Y): emitter of Q255 (R–Y)
Measuring Instrument	
Specified Value	See Fig. 1-35.

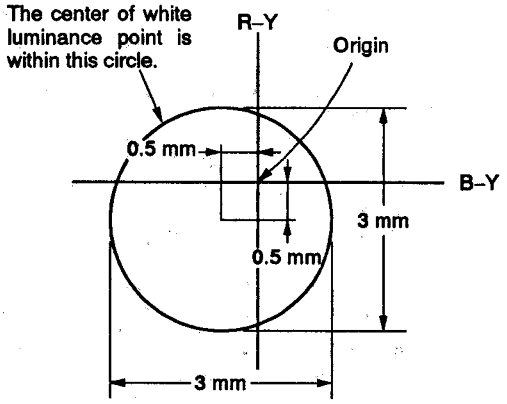
Connections:

1) Remove the jumper wire connected to Pin Ⓑ⑥ (CAM ADJ) of the check point array.
   (Set the EVR adjustment mode to OFF.)

Checking method:

1) Cover the lens with the C14 filter for color temperature correction.
2) Press the white balance button to select the outdoor white balance mode. (☀ mark is displayed on EVF screen.)
3) Confirm that the center of the white luminance point is within the standard circle.
   Note: When using a vectorscope, adjust the gain and phase of the vectorscope so that burst luminance point moves to the burst position of the color reproduction frame.

[When using vectorscope]



[When using oscilloscope]

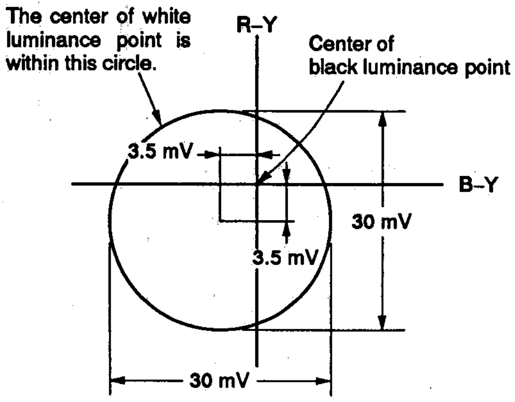

The center of white luminance point is within this circle.
R–Y
Center of black luminance point
3.5 mV
B–Y
30 mV
3.5 mV
30 mV

Fig. 1-35.

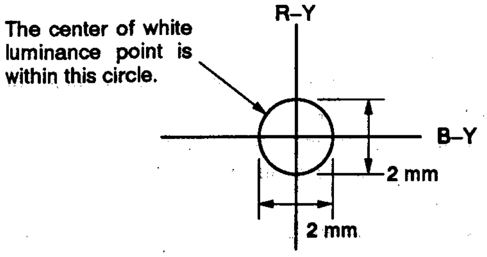
1-2-27. Auto White Balance Check (VC-81 Board)

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	When vectorscope used: video input/output terminals When oscilloscope used: CH1 (X): emitter of Q257 (B–Y) CH2 (Y): emitter of Q255 (R–Y)
Measuring Instrument	
Specified Value	See Fig. 1-36.

Checking method:

1) Select adjustment address 75 with the adjustment remote controller and enter adjustment data of F0. (Auto white balance tracking zone invalidity/all area discrimination mode setting)
2) Change the adjustment address to store the adjustment data in the memory.
3) Remove the jumper wire between Pin (B6) of the check point array and the ground.
   (Set the EVR adjustment mode to OFF.)
4) Set the white balance to the auto white balance mode.
5) Confirm that the white luminance point matches with the origin (or the black luminance point) when shooting the white pattern without the C14 filter.
6) Cover the lens with the C14 filter and confirm that the white luminance point matches with the origin (or the black luminance point) in about 2 seconds.
7) Connect Pin (B6) of the check point array to the ground with the jumper wire.
   (Set the EVR adjustment mode to ON.)
8) Select the adjustment address 75 with the adjustment remote controller and the adjustment data of 00.
   (Release auto white balance check mode)
9) Change the adjustment address to store the adjustment data in the memory.

[When using vectorscope]



[When using oscilloscope]

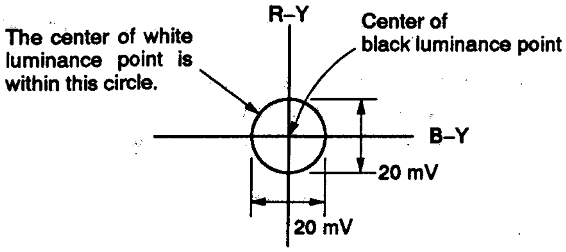

R–Y
Center of black luminance point
The center of white luminance point is within this circle.
B–Y
20 mV
20 mV

Fig. 1-36.

1-2-28. Focus Motor Speed Adjustment (VC-81 Board)

Subject	Arbitrary
Measurement Point	CN304
Measuring Instrument	AF microprocessor data reading jig
Adjustment Address	24 (FOCUS SPEED)
Specified Value	Average value of data indicated on jig=5.0 ± 0.5

Remarks: The rotation time from the close extreme to far extreme of the focus ring should be approximately 2.5 seconds after completion of adjustment.

Adjusting method:

1) Set the auto focus to ON.
2) Select adjustment address 25 with the adjustment remote controller and enter adjustment data of 01.
   (Sets hunching mode)
3) Set the adjustment address to 24.
4) Change the adjustment data so that the indication on the AF microprocessor data reading jig is 05 while the ring is rotating.
5) Press the HOLD button of the AF microprocessor data reading jig while the focus ring is rotating to read the indication value.
6) Repeat step 5) ten times and obtain the average value.
   Specified value=5.0 ± 0.5
   Repeat steps 4) and 5) if the specified value is not satisfied.
7) Set the adjustment address to 25 and set the adjustment data to 00. (Releases hunching mode)
8) Change the adjustment address to store the adjustment data in the memory.

1-2-29. Macro Area Adjustment (VC-81 Board)

Subject	Arbitrary
Measurement Point	CN304
Measuring Instrument	AF microprocessor data reading jig
Adjustment Address	27 (MACRO)
Specified Value	(Value at zoom ring WIDE position) -1

Adjusting method:

1) Press the WIDE side of the zoom button and set the zoom ring to the WIDE position (7 mm).
2) Select adjustment address 25 with the adjustment remote controller and set the adjustment data to 03. (Sets zoom position indication mode)
3) Read the data indicated on the AF microprocessor data reading jig. (Data in the range of 06 to 0E is displayed if normal.)
4) Change the adjustment address to 27.
5) Subtract 1 from the data read from the jig and enter as the adjustment data. (See Table 1-5. Hexadecimal — decimal conversion table)
6) Press the TELE side of the zoom ring and set the zoom ring to the TELE position (56 mm).
7) Confirm that the indication on the AF microprocessor data reading jig is 3D to 3F.
8) Change the adjustment address to 25 and set the adjustment data to 00. (Releases zoom position indication mode)
9) Change the adjustment address to store the adjustment data in the memory.

1-2-30. Auto Focus Adjustment (VC-81 Board)

1. Adjustment in all black pattern

Subject	All black (cover lens with black cap)
Measurement Point	CN304
Measuring Instrument	AF microprocessor data reading jig
Adjustment Address	33 (FHB), 35 (AGC B)

Adjusting method:

1) Set the auto focus to OFF with the focus button.
2) Select adjustment address 25 with the adjustment remote controller and set the adjustment data to FF. (Set the auto focus filter to FH)
3) Read the data indicated on the AF microprocessor data reading jig (FH B) and enter adjustment address 33. (FH B will be 00 to 04.)
4) Select adjustment address 25 and set the adjustment data to FD. (Set the auto focus filter to FA position.)
5) Confirm the data indicated the AF microprocessor data reading jig (FA B) is 00 to 0B.
6) Select adjustment address 25 and set the adjustment data to 0B. (Auto focus AGC adjustment mode)
7) Read the data indicated on the AF microprocessor data reading jig (AGC B) and enter adjustment address 35.
8) Perform "Adjustment in all white pattern".

2. Adjustment in all white pattern

Subject	All white pattern[Note]
Measurement Point	CN304
Measuring Instrument	AF microprocessor data reading jig
Adjustment Address	32 (FHW), 34 (AGC W)

Note: Place the pattern box without chart in the front of the camera. Set the zoom lever to TELE position and shoots the pattern box.

Adjusting method:

1) Select adjustment address 25 with the adjustment remote controller and enter adjustment data of FF.
2) Read the data (FH W) indicated on the AF microprocessor data reading jig and enter adjustment address 32. (FH W should be 00 or 01.)
3) Select adjustment address 25 and set the adjustment data to FD.
4) Confirm that the data (FA W) indicated on the AF microprocessor data reading jig is 00 to 03.
5) Select adjustment address 25 and set the adjustment data to 0B.
6) Read the data (AGC W) indicated on the AF microprocessor data reading jig and enter adjustment address 34.
7) Select adjustment address 25 and enter adjustment data of 00.
8) Change the adjustment address to store the adjustment data in the memory.

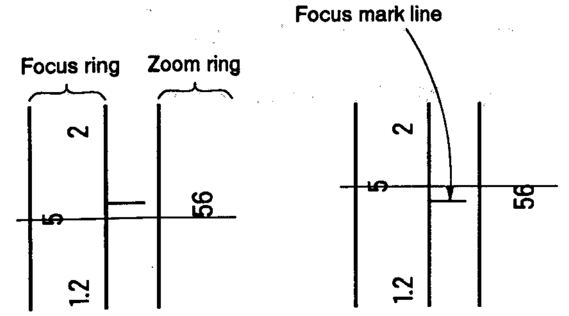
1-2-31. Auto Focus Check

Note: Perform adjustment with the EVF (electronic viewfinder) attached.

Subject	Siemens star (position 1.5 m from the front of the lens reference plane (CCD imager))

Measuring method:

1) Place the Siemens star 1.5 m from the front of the lens reference plane (See Fig. 1-2.).
2) Set the zoom lever to the TELE position (56 mm) and set the auto focus to ON with FOCUS button.
3) Adjust the position of the camera so that center of the Siemens star is lined up with the center of the monitor screen on the monitor TV screen.
4) To open the iris, decrease the illumination of the Siemens star chart to the range in which the normal image without the noise can be obtained.
   (Or cover lens with the ND filter.)
5) Set the auto-focus to OFF with FOCUS button.
6) Manually rotate the focus ring to set the focus. Confirm that the focus mark is inside the range shown in Fig. 1-37. at this time.
   Perform "Flange Back Adjustment" if the specification is not satisfied.
7) Turn the focus ring to the close extreme (1.2 m).
8) Set the auto-focus to ON with FOCUS button.
9) Confirm that there is focusing within two seconds and a sharp image can be obtained.
10) Set the auto-focus to OFF and turn the focus ring to the far extreme (∞).
11) Set the auto-focus to ON.
12) Confirm that there is focusing within three seconds and a sharp image can be obtained.



Specified value: The center of the character "5" of the focus ring is within the character "56" of the zoom ring.

Fig. 1-37.

1-2-32. Fader Level Adjustment

Subject	Arbitrary
Measurement Point	Pin (A8) (CAM Y) of check point array
Measuring Instrument	Oscilloscope
Adjusting Element	0F (FADER LEVEL)
Specified Value	20 ± 5 mV

Adjusting method:

1) Set adjustment data FF to adjustment address 03 (FADER) with the adjustment remote controller.
2) Change the adjustment address to 0F.
3) Change the adjustment data and set the FADER Y signal level to 20 ± 5 mV.
4) Change the adjustment address to 03 and set the adjustment data to 00.
5) Change the adjustment address to store the adjustment data in the memory.

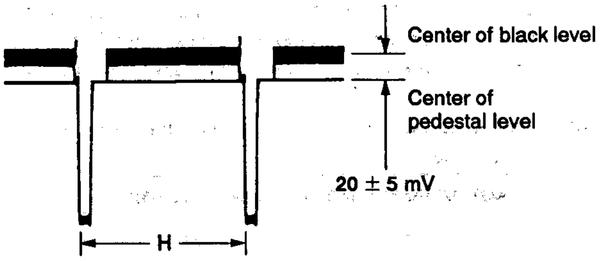


Fig. 1-38.

1-2-33. Power Zoom Speed Check

Subject	Arbitrary
Measuring Instrument	Stop watch
Adjustment Address	22 (ZOOM L SPD) 23 (ZOOM H SPD)
Specified Value	8.0 ± 2.0 sec.

Note: 1) In the adjustment mode, the zoom button of the remote commander does not function.

Checking method:

1) Confirm that the adjustment data of adjustment address 22 and 23 is 44.
2) Set the zoomring to the TELE-end position.
3) Press the WIDE side of the zoom button and measure how long it takes to rotate from TELE-end to WIDE-end.
4) Set the zoomring to the WIDE-end position.
5) Press the TELE side of the zoom button and measure how long it takes to rotate from WIDE-end to TELE-end.
6) If the specified value is not obtained in the step 2) or 3), change the adjustment address 22 and 23 with the adjustment remote controller and repeat steps 1) through 4). (Input the same value for adjustment address 22 and 23.)

Note: If the adjustment data is too small, the zoom motor will not rotate.

Adjustment data	Zoom speed
Large ↕ Small	Fast ↕ Slow

Table 1-10.

1-3. CAMERA REC SYSTEM ADJUSTMENTS

1-3-1. VCO Adjustment (VC-81 Board)

Subject	Arbitrary
Measurement Point	Pin ⑦ of IC141
Measuring Instrument	Digital voltmeter
Adjusting Element	CT141
Specified Value	2.8 ± 0.2 Vdc

Adjusting method:

1) Set to 2.8 ± 0.2 Vdc with CT141.

1-3-2. Chroma Input Level Adjustment (VC-81 Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin ① of IC503
Measuring Instrument	Oscilloscope
Adjusting Element	RV501
Specified Value	420 ± 20 mVp-p

Adjusting method:

1) Adjust the burst signal level to 420 ± 20 mVp-p using RV501.

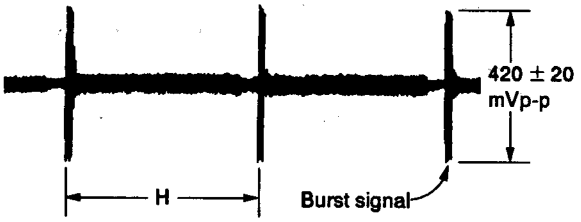


Fig. 1-39. Chroma input level adjustment

1-3-3. Recording Chroma RF Level Adjustment (VC-81 Board)

Subject	All black (cover lens with black cap)
Mode	Camera recording
Measurement Point	TP212 (emitter of Q241) on VS-63 board check land
Measuring Instrument	Oscilloscope
Adjusting Element	RV504
Specified Value	220 ± 10 mVp-p

Adjusting method:

1) Adjust the burst signal level to 220 ± 10 mVp-p using RV504.

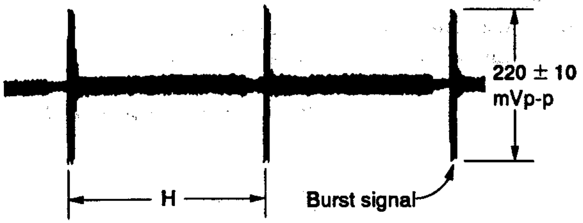


Fig. 1-40. Recording chroma RF level adjustment

1-3-4. Y FM Carrier Frequency Adjustment (VC-81 Board)

Subject	Arbitary
Mode	Camera recording
Measurement Point	TP161 (emitter of Q237) on VS-63 board check land
Measuring Instrument	Frequency counter
Adjusting Element	RV502
Specified Value	4.29 ± 0.04 MHz

Connections:

1) Connect the Pin (A8) (CAM Y) of the check point array to Pin ④ (CAM 5V) of W801 with a jumper wire.

Adjusting method:

1) Adjust to 4.29 ± 0.04 MHz with RV502.
2) Be sure to perform deviation adjustment.

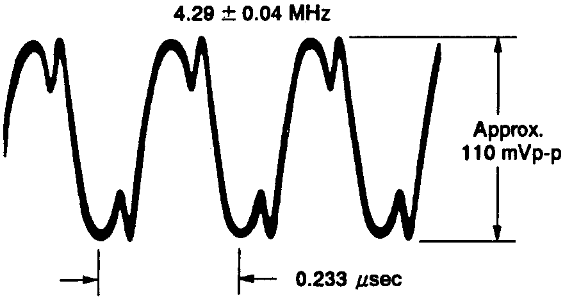


Fig. 1-41. Y FM carrier frequency adjustment

1-3-5. Y FM Deviation Adjustment (VC-81 Board)

Subject	All black (cover lens with black cap)
Mode	Camera recording and playback
Signal	All black signal recorded with the camera. Alignment tape for checking operation (WR5-5NSP) Color bar section
Measurement Point	Video input/output terminal
Measuring Instrument	Oscilloscope
Adjusting Element	RV503
Specified Value	(Horizontal sync signal level of alignment tape) ± 0.014V

Note: 1) Confirm that "PB Y Level 1 Adjustment", "PB Y Level 2 Adjustment" and "Y FM Carrier Frequency Adjustment" of the video block adjustment should be completed.

2) Terminate the video input/output terminal (J901) at 75Ω.

Adjusting method:

1) Play the color bar section of the alignment tape (WR5-5NSP) and make a note of the horizontal sync signal level (approx. 0.286V) at this time.
2) Record the all black subject with the camera.
3) Play back the tape recorded in step 2).
4) Confirm that the horizontal sync signal level at this time is the same as the level noted in step 1).
   Specified value:
   (Horizontal sync signal level of alignment tape) ± 0.014V
5) If the specified value is not satisfied, repeat 2) to 4) after turning RV503 in the following manner.

	Rotation direction of RV503
When smaller than specified value	Counterclockwise (↺)
When larger than specified value	Clockwise (↻)

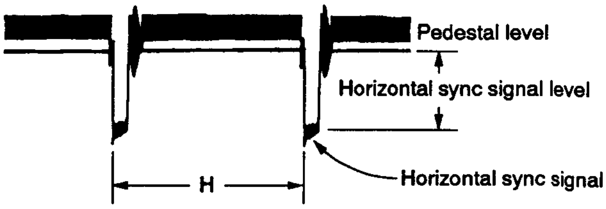


Fig. 1-42. Y FM deviation adjustment

1-3-6. REC Y Level Adjustment (VC-81 Board)

Subject	All black (cover lens with black cap)
Mode	Camera recording
Measurement Point	TP161 (emitter of Q237) on VS-63 board check land
Measuring Instrument	Oscilloscope
Adjusting Element	RV505
Specified Value	110 ± 10 mVp-p

Adjusting method:

1) Adjust RV505 to 110 ± 10 mVp-p.

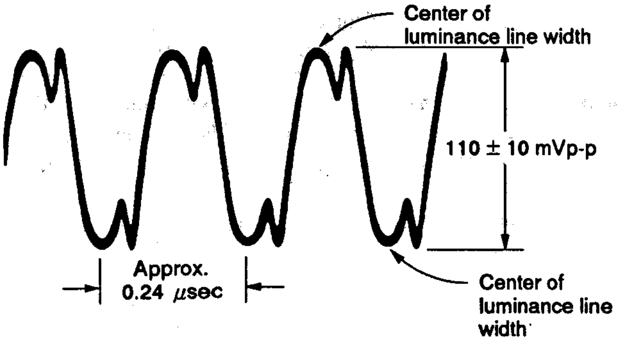

Center of luminance line width
110 ± 10 mVp-p
Approx. 0.24 μsec
Center of luminance line width

Fig. 1-43. REC Y level adjustment

1-3-7. Character Generator f_0 Adjustment (TI-32 Board)

Subject	No signal
Measurement Point	Pin ⑦ of IC802 (TP806)
Measuring Instrument	Frequency counter
Adjusting Element	CT802
Specified Value	6.24 ± 0.05 MHz

Connection:

1) Connect TP805 (Pin ⑳ of IC802) and TP803 (V_{DD}) with a jumper wire.

Adjusting method:

1) Adjust CT802 to 6.24 ± 0.05 MHz.

1-4. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT (VF-41 BOARD)

1-4-1. Horizontal Tilt Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5NSP) Monoscope portion
Specified Value	See Fig. 1-45.

Adjustment method:

1) Adjust RV955 (BRIGHT) for appropriate brightness on CRT screen.
2) Loosen the DY (deflection yoke) tightening nut. (See Fig. 1-44.)
3) Make a picture horizontal by turning the DY.
4) Retighten the nut. (Do not tighten excessively.)

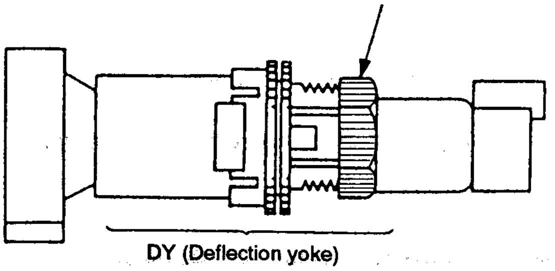
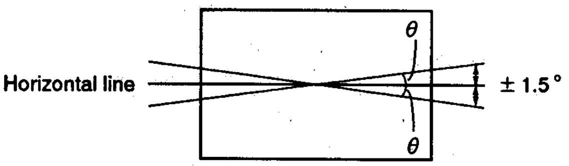

Loosening this nut releases the DY
DY (Deflection yoke)

Fig. 1-44.


θ
Horizontal line
± 1.5°
θ

Specified value: Image orientation within ± 1.5° of horizontal line.

Fig. 1-45.

1-4-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5NSP) Monoscope portion
Specified Value	See Fig. 1-47.

Adjustment method:

1) Turn the centering adjustment rings to provide an image with even right, left, upper and lower margins. (See Fig. 1-46.)

Note: Since the centering position is affected by the earth magnetism, turn the equipment over 360 ° horizontally, and make adjustments at the orientation which exhibits median displacements of the image.

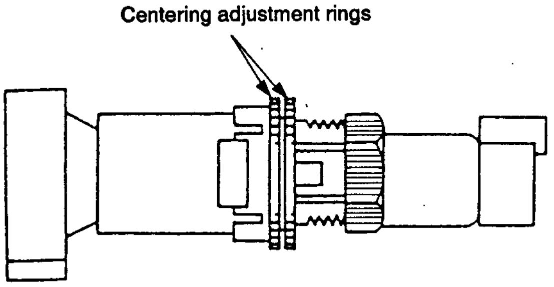


Fig. 1-46.

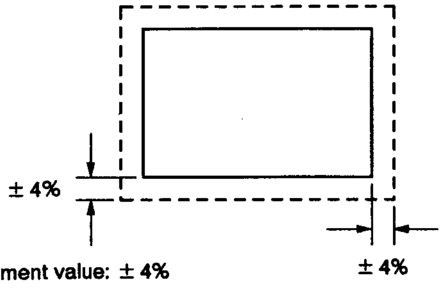


Fig. 1-47.

1-4-3. AFC Adjustment

Mode	E-E or Camera standby
Signal	Color bar
Measurement Point	C954 ⊕ side
Measuring Instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment Element	RV951 (AFC)
Specified Value	2.6 ± 0.05 Vdc

Adjustment method:

1) Adjust RV951 (AFC) for 2.6 ± 0.05 Vdc.

1-4-4. Horizontal Amplitude Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5NSP) Monoscope portion
Adjustment Element	C961
Specified Value	6 ± 2%

Adjustment method:

1) Line up the upper and lower sections of the monoscope image with the upper and lower edges of the screen by rotating RV952 (V SIZE).
2) Rotate RV955 (BRIGHT) to set the brightness to the normal level.
3) Short or open the pattern A of the H size adjustment capacitor (C961) to provide horizontal overscans of 6 ± 2% (total of left and right).
(See Fig. 1-49.)

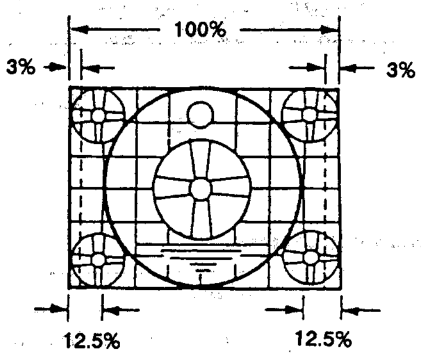
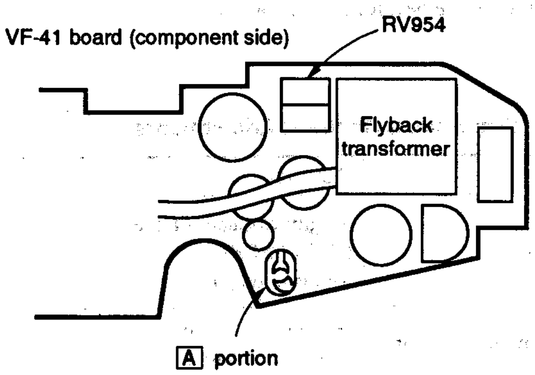


Fig. 1-48.



A section	H size
Open	Small
Short	Large

Fig. 1-49.

1-4-5. Vertical Amplitude Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5NSP) Monoscope portion
Adjustment Element	RV952 (V SIZE)
Specified Value	5 ± 2%

Adjustment method:
1) By turning RV952 (V SIZE), adjust vertical overscan to 5 ± 2% (upper and lower total).

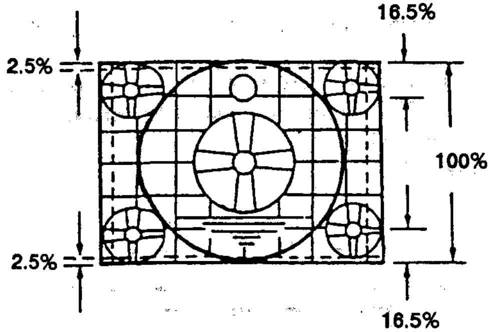


Fig. 1-50.

1-4-6. Focus Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5NSP) Monoscope portion
Adjustment Element	RV954

Adjustment method:
1) Adjust to the best focus point with RV954.

1-4-7. Brightness, Contrast Adjustments

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5NSP) Monoscope portion
Adjustment Element	Brightness: RV955 Contrast: RV953

Adjustment method:
1) Adjust RV955 (BRIGHT) and RV953 (CONT) alternately until the bright and dark areas of a gray scale are displayed correctly. (The bright areas should not be made too bright to avoid a fuzzy display of the cross-hatches in the monoscope circle, and the brightness of the dark areas should be such that discrimination between the darkest and second darkest area is possible.)

SECTION 2

MECHANISM BLOCK ADJUSTMENT

Refer to the separate "8 mm Video Mechanism Block Adjustment Guide III U mechanism for adjustment and checking of the mechanism block and for replacement of mechanical parts.

2-1. OPERATING WITH THE CASSETTE COMPARTMENT HOLDER ASSEMBLY REMOVED (See Fig. 2-1.)

Note: The unit will not function when a strong light source is near the unit.

1. Loading

1) Remove the outer and camera blocks referring to the section of service manual (9-972-996-11), and supply the power to the unit. (Set up the mechanism deck so as to operate.)
2) Set the power switch to "VTR" position.
3) Cover the LED assembly with ❶ opaque cap or the like.
4) Keep pressing the EJECT lever ❸ in the Ⓐ direction until the loading is completed.

2. Setting to the playback state

1) Perform the steps in "1. Loading".
2) Press the playback button.

3. Setting to the recording state

1) Perform the steps in "1. Loading".
2) Fix the RECOG switch ❷ with an adhesive tape.
3) Turn on the REC switch.

4. Ejecting

1) Press the EJECT button.

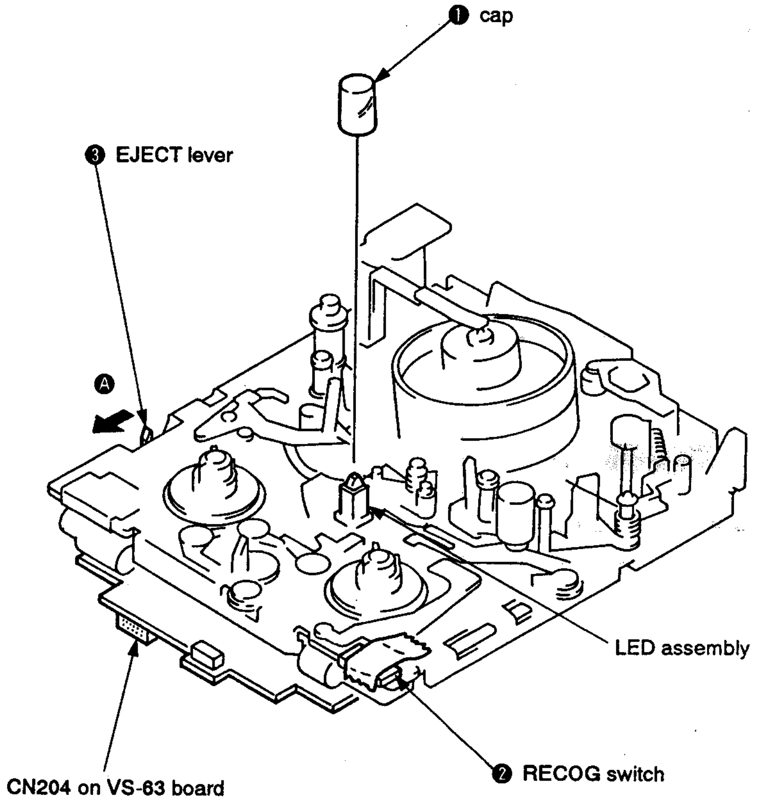


Fig. 2-1.

2-2. TAPE PATH ADJUSTMENT

1. Preparations

1) Clean the tape running surface (tape guide, drum, capstan shaft and pinch roller).
2) Short circuit Pins ③ and ⑦ of CN204 on the VS-63 board to set the PATH mode.
3) Connect to the oscilloscope.
   Channel 1...Pin ② of CN204 on VS-63 board
   External trigger...Pin ④ of CN204 on VS-63 board
4) Play back the tracking alignment tape (WR5-1NP or WR5-1N).
5) Confirm that the RF waveforms at both sides of the entrance and exit on the oscilloscope are flat.
   If not, perform the adjustment following "8 mm Video Mechanism Adjustment Guide III U mechanism "

CN204 on VS-63 board

1	PB RF CH1
2	PB RF CH2
3	PB RF GND
4	RF SWP
5	UN (1/2 RF SWP)
6	UN (REC C CHECK)
7	UN (PATH)
8	UN (TEST)
9	UN (CAM ADJ)
10	UN (SP)/LP
11	DRUM I COM
12	CAP FG

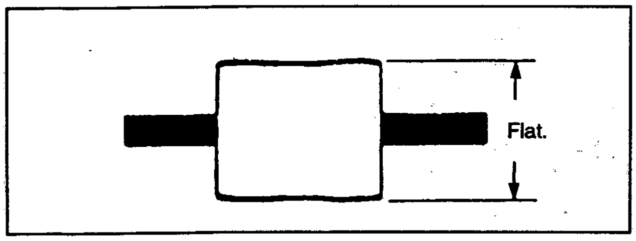


Fig. 5-2.

SECTION 3
VIDEO BLOCK ADJUSTMENTS

During the adjustments, see the arrangement diagram for adjustment parts from page 62.

3-1. PRE-ADJUSTMENT PREPARATIONS (VIDEO BLOCK)

Use the following measuring instruments for adjustment of the Video block.

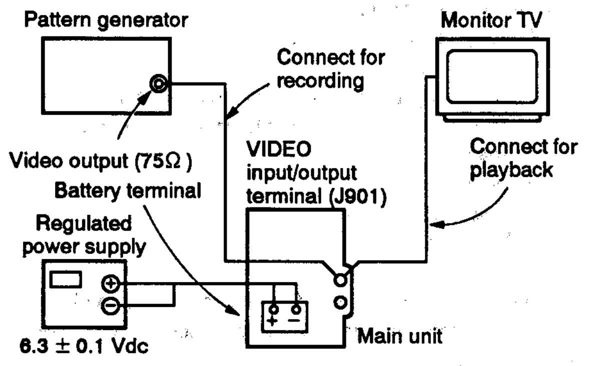
3-1-1. Equipment to be Used

1) Monitor TV
2) Dual trace oscilloscope of over 10 MHz band, incorporates delay mode. (Use 10:1 probe unless otherwise specified.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuator
10) Regulated power supply
11) Alignment tapes
    Tracking adjustment (WR5-1NP)*1
        Parts Code: 8-967-995-02
    Video frequency characteristics adjustment (WR5-6N)*2
        Parts Code: 8-967-995-12
    Operation check
    (WR5-4NL)*3
        Parts Code: 8-967-995-51
    (WR5-5NSP)*4
        Parts Code: 8-967-995-42
    Note: *1 WR5-1N (8-967-995-01) is also available.
    *2 WR5-2N (8-967-995-11) is also available.
    *3 WR5-3NL (8-967-995-31) is also available.
    *4 WR5-4NSP (8-967-995-41) is also available.
12) Adjustment remote controller (Modification of RM-95)

3-1-2. Connection of Equipment

Unless otherwise specified, adjustments are made with the measuring instrument connected as shown in Fig. 3-1.

- Camera/video power switch ···· VTR position
- Input/output selector switch ···· INPUT position (REC mode)
  OUTPUT position (PB mode)
- Connect the adjustment remote controller to the remote terminal (J941 on the SW-158 board) when performing "Battery Down Adjustment".


Pattern generator
Monitor TV
Connect for recording
Video output (75Ω)
VIDEO input/output terminal (J901)
Connect for playback
Battery terminal
Regulated power supply
6.3 ± 0.1 Vdc
Main unit

When connecting the pattern generator and the monitor TV at the same time, set the input/output selector switch to INPUT position and connect the pattern generator to the VIDEO input/output terminal.
For the connection of the monitor TV refer to the diagram below.

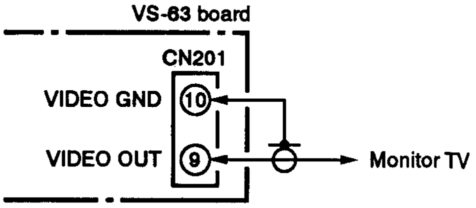

VS-63 board
CN201
VIDEO GND
10
VIDEO OUT
9
Monitor TV

Fig. 3-1.

3-1-3. Note on Adjustments

The video block adjustment can be made without the camera block and the cabinet R except "Battery Down Adjustment" of system control adjustment. Remove the following four connectors in case of removing the camera block.

1. CN3 (8-pin) on DD-31 board
2. CN202 (7-pin) on VS-63 board
3. CN802 (16-pin) on VC-81 board
4. CN904 (3-pin) on FK-41 board.

The cabinet L is not required except for "Battery Down Adjustment". When removing the cabinet L, remove following connector.

1. CN911 (10-pin) on ZOOM SWITCH board.

The EVF (electronic viewfinder) block is not required for the video block adjustment. When removing the EVF block, remove the following connector.

1. CN205 (4-pin) on VS-63 board.

The microphone board (MA-71 board) is not required for the video block adjustment. When removing the microphone board, remove the following connector.

1. CN402 (3-pin) on AU-92 board.

Remove the following four boards from the MD frame, in case of adjusting the audio system or opening the VS-63 board.

1. FK-41 board
2. AU-92 board
3. DD-31 board (DC-DC converter)
4. VS-63 board

The zoom switch board is not required for the video block adjustments. When removing the zoom switch board, remove the following connector.

1. CN903 (11-pin) on FK-41 board.

3-1-4. Set-up for Adjustment

Since the video signal obtained from the pattern generator is used as the adjusting signal for the electrical adjustment, this video output signal should meet the required specifications. Connect an oscilloscope to Pin ⑧ (VIDEO IN) of CN201 on the VS-63 board and make sure that the amplitude of the video SYNC signal is approximately 0.3V, that the amplitude of the video image is approximately 0.7V, that the burst signal amplitude is approximately 0.3V with flat characteristics, and that the signal level ratio between the burst signal and "Red" signal is 0.30:0.66. The video signal (color bars) used for electrical adjustment are shown in Fig. 3-2.

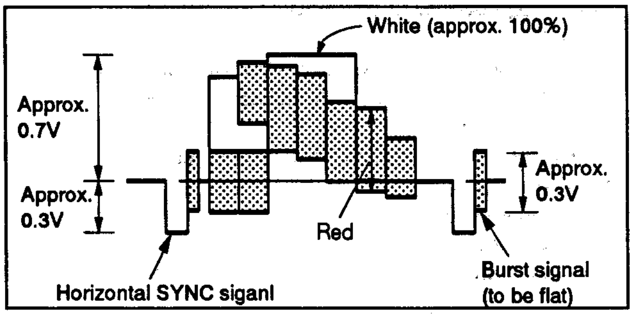


Fig. 3-2. Color bar signal of pattern generator

3-1-5. Alignment Tapes

The following alignment tapes are available.
Use the tape indicated in the signal column; however, in case there is no type indication in the signal column, use any tape for operation check.

Tape	REC mode	Type	Tape speed	Contents		Use
				Video area	PCM area	
Tracking WR5-1NP	L	MP	SP	CH2: 1 MHz tape path adjustment signal		Tape path adjustment
Video freq. characteristics WR5-6N	L	MP	SP	RF sweep: 0 to 10 MHz Marker: 1, 3.58, 5.5, 7MHz		Frequency characteristics adjustment
Operation check (SP mode) WR5-4NSP or WR5-5NSP	L	MP	SP	• Video signal Color bar: 4 min. Monoscope: 4 min. • Audio signal (AFM) 400 Hz, 60% modulation	• Audio signal (PCM) Monoscope: 20 Hz 20sec, 400 Hz 20sec, 14 kHz 20sec } Repeat four times. Color bar: 1 kHz 4 min.	Operation check
Operationn check (LP mode) WR5-4NL	L	MP	LP	• Video signal Color bar: 4 min. Monoscope: 4 min. • Audio signal (AFM) 400 Hz, 60% modulation		

Note: Recording mode
L ········· Conventional mode
E ········· Hi8 (high band) mode

Tape type
MP ········ Particle type metal tape
ME········ Evaporated type metal tape

Table 3-1.

75% color bar signal recorded on an alignment tape is shown in Fig. 3-3.

Note: Measured at VIDEO input/output terminal.
(75Ω termination)

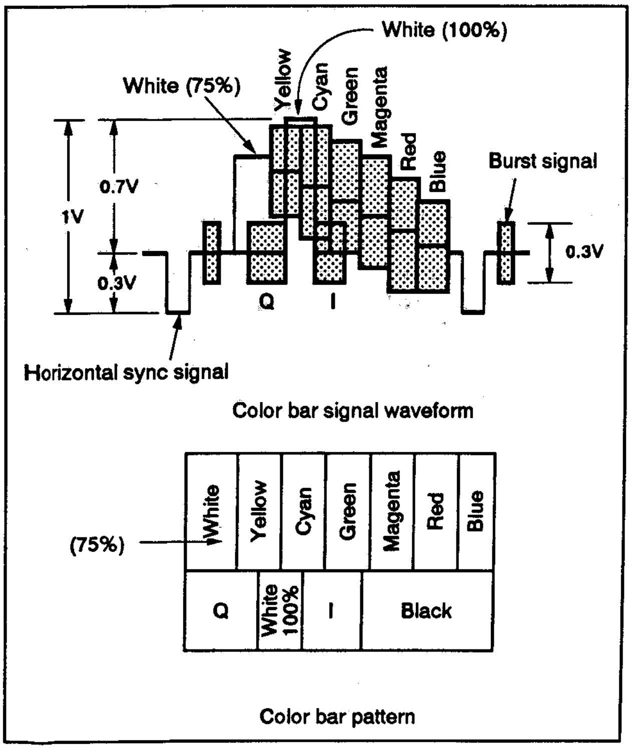

White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst signal
1V
0.7V
0.3V
0.3V
Q
I
Horizontal sync signal
Color bar signal waveform
(75%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Q
White 100%
I
Black
Color bar pattern

Fig. 3-3. Alignment tape color bar signal

3-1-6. I/O Level and Impedance

Video input — Pin jack
Input signal: 1 Vp-p, 75Ω unbalanced, negative sync

Video output — Pin jack
Output signal: 1 Vp-p, 75Ω unbalanced, negative sync

Audio input — Pin jack
Input level: –7.5 dBs (0 dBs=0.775 Vrms)
Input impedance: More than 47 kΩ

Audio output — Pin jack
Specified output: –7.5 dBs
Output impedance: 2.2 kΩ or less

3-1-7. Service Modes

This unit is equipped with service modes for adjustment and operation checking.

There are the following two service modes and switching between them is made by connection between GND and Pin (B6) of the check point array CPA001 on the VC-81 board.

Service Mode	Function	Connection between GND and Pin (B6) of the check point array
Status indication mode	For video block adjustment, operation checking	Open (no connection)
EVR adjustment mode	For adjustment of camera block	Shorted

Refer to "Camera Block Adjustment" for details on the EVR adjustment mode.

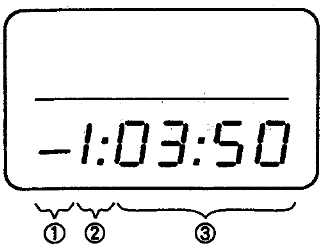
1. Invoking service mode

1) Connect the adjustment remote controller to the remote terminal (J941 on SW-158 board) of the main unit.
2) Set HOLD switch of the adjustment remote controller to the HOLD position (SERVICE position).

The status indication mode is invoked by the above operation. (To select the EVR adjustment mode, connect between Pin (B6) of the check point array CPA001 and GND with a jumper wire.)

2. Indication on adjustment remote controller LCD in the status indication mode

Note: In categories 1 through 5, the same information is displayed on the EVF screen.



①……Minus segment flashes to indicate that the service mode has been invoked.

②……Indicates service mode category.

③……Indicates battery voltage, LAST EMG, PRESET EMG, MODE SW CODE, or DEW MODE according to current category.

3. Category selection and indication in each category

Select the desired category with $\boxed{\text{FF}}$ button of the adjustment remote controller. There are five categories (1 through 5) and the indications are different for each. (Note that the category 0 is the EVR adjustment mode.)

Caategory	Indication on LCD	
1	A/D conversion value for battery voltage (decimal indication)[Note 1] 00 : 00 – 02 : 55	
2	LAST EMG (last emergency)[Note 2] Refer to Service Mode Error Indications.	
3	PRESENT EMG (current emergency)[Note 3] Refer to Service Mode Error Indications.	
4	MODE SW CODE (mechanism status)	
	00 : 00	I.A
	00 : 01	I.C
	00 : 02	I.B
	00 : 03	STOP
	00 : 04	EJECT
	00 : 05	FWD (REC, PB, FF, REW, CUE, REVIEW, PAUSE)
	00 : 06	UNLOAD
	00 : 07	I.D
5	DEW MODE	
	00:00	NORMAL
	00:01	SENSOR ON DEW MODE (sensor in DEW mode)
	00:02	SENSOR OFF DEW MODE (Restart of operation is possible after the following conditions have been satisfied: 1. EJECT 2. More than 1H has elapsed.)

Note: 1) Indicates a value proportional to the battery voltage.

2) LAST EMG indicates the error occurred just before entering the service mode. Even if an error occurs in the service mode, it is not indicated.

3) PRESENT EMG indicates the status when $\boxed{\text{FF}}$ button of the adjustment remote controller was pressed. So, the indication does not change even if the error is eliminated.

- **Service mode error indication**

Error Status	PRESENT EMG Indication	LAST EMG Indication
No error	00 : 00	00 : 00
Loading motor	00 : 01	00 : 01
REEL FG error during unthreading	00 : 02	00 : 02
REEL FG error not during unthreading	00 : 03	00 : 03
Capstan error	00 : 04	00 : 04
DRUM FG error (0) when starting drum	00 : 05	00 : 05
DRUM FG error (1) when starting drum	01 : 05	00 : 14
DRUM FG error (2) when starting drum	02 : 05	00 : 15
No DRUM PG (0) when starting drum	00 : 06	00 : 06
No DRUM PG (1) when starting drum	01 : 06	00 : 14
No DRUM PG (2) when starting drum	02 : 06	00 : 15
DRUM FG error (0) when drum stationary	00 : 07	00 : 07
DRUM FG error (1) when drum stationary	01 : 07	00 : 14
DRUM FG error (2) when drum stationary	02 : 07	00 : 15
No DRUM PG (0) when drum stationary	00 : 08	00 : 08
No DRUM PG (1) when drum stationary	01 : 08	00 : 14
No DRUM PG (2) when drum stationary	02 : 08	00 : 15
Phase error (0) when drum stationary	00 : 09	00 : 09

(1) During tape threading
(2) During tape unthreading
(0) Others

4. Releasing the service mode

The service mode can be released by returning HOLD switch of the adjustment remote controller to the NORMAL position or by disconnecting the adjustment remote controller from the remote terminal.

3-2. POWER SUPPLY BLOCK ADJUSTMENTS

3-2-1. Oscillation frequency adjustment (DD-31 Board)

Mode	Playback
Signal	Arbitrary tape
Measurement Point	Pin ⑦ of IC102
Measuring Instrument	Frequency counter
Adjusting Element	RV105
Specified Value	475 ± 5 kHz

Adjusting method:

1) Adjust RV105 for 475 ± 5 kHz.

3-2-2. VIDEO 5V adjustment (DD-31 Board)

Mode	Power ON
Measurement Point	Pin ② of CN102
Measuring Instrument	Digital voltmeter
Adjusting Element	RV103
Specified Value	4.92 ± 0.01 V

Adjusting method:

1) Adjust RV103 for 4.92 ± 0.01V.

3-2-3. Power Supply Check (VS-63 Board)

Mode	Power ON
Measuring Instrument	Digital voltmeter
VIDEO 5V	
Measurement Point	Pin ② of W605
Specified Value	4.92 ± 0.04V
REG 5V	
Measurement Point	Pin ③ of W605
Specified Value	4.91 ± 0.04V
EVF 5V	
Measurement Point	Pin ① of W605
Specified Value	4.96 ± 0.03V
MOTOR 5.1V	
Measurement Point	Pin ⑩ of CN602
Specified Value	5.1 ± 0.3V

Checking method:

1) Each power supply voltage should meet the corresponding specified value.

3-3. SYSTEM CONTROL ADJUSTMENTS

3-3-1. Battery Down Adjustment (DD-31 Board)

Mode	CAMERA recording
Signal	Arbitrary
Measurement Point	Check on LCD of adjustment remote controller
Measuring Instrument	
Adjusting Element	RV101
Specified Value	"–1:01:46"

Connections:

1) Connect a regulated power supply and digital voltmeter as shown in Fig. 3-4.
2) Connect Pins ⑧ (UN (TEST)) and ③ (PB RF GND) of CN204 on the VS-63 board with a jumper wire. (TEST mode)
3) Confirm that EDIT switch is off position. (Setting of SP mode)

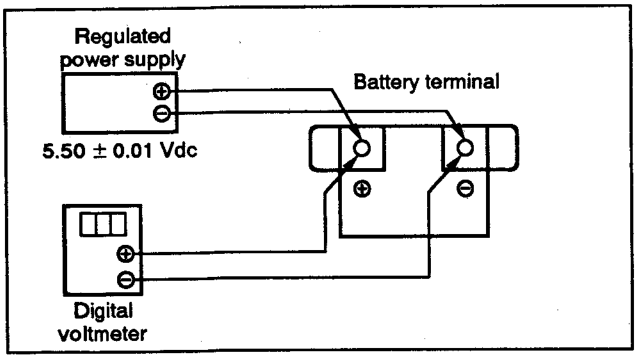


Fig. 3-4.

Adjusting method:

1) Connect the adjustment remote controller to the remote terminal (J941 on SW-158 board).
2) Set the power supply switch (S901) on the FK-41 board to CAMERA position to select the camera recording mode.
3) Set HOLD switch of the adjustment remote controller to the HOLD position (service position).
4) Confirm that the indication of the digital voltmeter is 5.50 ± 0.01 Vdc.
5) Set the LCD counter indication on the adjustment remote controller to "–1:01:46" using RV101 on the DD-31 board. (refer to Fig. 3-6.)

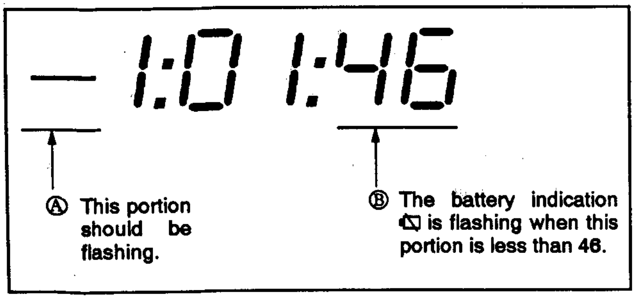

–1:01:46
Ⓐ This portion should be flashing.
Ⓑ The battery indication 🔋 is flashing when this portion is less than 46.

Fig. 3-5.

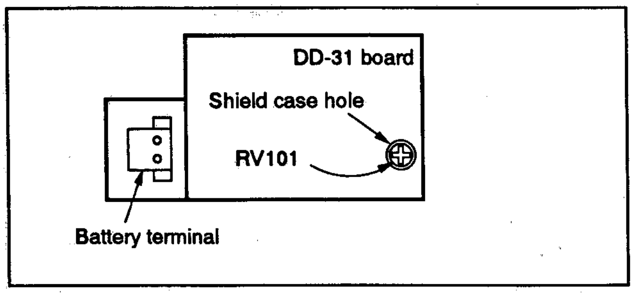


Fig. 3-6.

Checking method:
Remove connections 2) and 3) and check the following points. If the required conditions are not obtained, repeat the adjustments again.

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter reading becomes 5.65 ± 0.01 Vdc. (VTR in camera recording mode)
2) Confirm that the 🔋 mark is not lit on the EVF (viewfinder) screen (TALLY lamp is lit).
3) Lower the output voltage of the regulated power supply so that the digital voltmeter reading becomes 5.53 ± 0.01 Vdc.
4) Confirm that the 🔋 mark and the TALLY lamp are flashing in approx. 1 sec intervals on the EVF screen.
5) Lower the output voltage of the regulated power supply so that the digital voltmeter reading becomes 5.47 ± 0.01 Vdc.
6) Confirm that the flashing interval of the 🔋 mark and the TALLY lamp on the EVF screen becomes shorter, and that the VTR stops and the power is turned off.

3-3-2. System Clock Adjustment (VC-81 Board)

Note: Perform the adjustment without the lens.

Mode	Power ON
Measurement Point	Pin (59) of IC561
Measuring Instrument	Frequency counter
Adjusting Element	RV561
Specified Value	330 ± 5 kHz

Adjusting method:

1) Adjust RV561 for 330 ± 5 kHz.

3-4. SERVO SYSTEM ADJUSTMENTS

3-4-1. Capstan FG Frequency Check (VS-63 Board)

Mode	Recording (SP/LP)
Signal	Arbitrary
Measurement Point	Pin ⑫ (CAP FG) of CN204
Measuring Instrument	Frequency counter
Specified Value	SP mode: 948 ± 2 Hz LP mode: 472 ± 2 Hz

Checking method:

1) Connect Pin ⑧ (UN (TEST)) and Pin ③ (PB RF GND) of CN204 with a jumper wire. (TEST mode)
2) Connect Pin ⑩ of CN204 to ground with a jumper wire or turn on EDIT switch.
   (Setting of LP mode)
3) Set to the recording mode and confirm that the capstan FG frequency is 472 ± 2 Hz.
4) Set to the stop mode and remove the jumper wire between Pin ⑩ of CN204 and GND or turn off EDIT switch. (Setting of SP mode)
5) Set to the recording mode and confirm that the capstan FG frequency is 948 ± 2 Hz.
6) Remove the jumper wire connected in step 1).

3-4-2. Capstan FG Offset Adjustment (VS-63 Board)

Mode	Recording
Signal	Arbitrary
Measurement Point	Pin ⑫ (CAP FG) of CN204
Measuring Instrument	Oscilloscope
Adjusting Element	RV502
Specified Value	50 ± 1% duty cycle

Adjusting method:

1) Adjust RV502 so that the CAP FG output waveform duty cycle becomes 50 ± 1%.

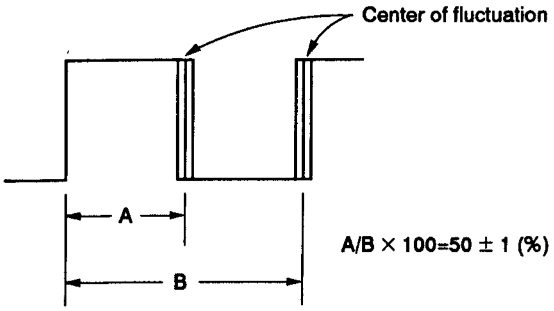


Fig. 3-7. Capstan FG offset adjustment

3-4-3. Drum Phase Lock Check (VS-63 Board)

Mode	Recording (SP)
Signal	Arbitrary
Measurement Point	CH-1: Pin ⑪ (SYSTEM SYNC) of IC601 CH-2: Pin ④ (RF SWP) of CN204
Measuring Instrument	Oscilloscope
Specified Value	224 ± 50 μsec

Checking method:

1) Confirm that duration between the switching point of CH-2 (RF SWP) and the rising edge of CH-1 (SYSTEM SYNC) is 224 ± 50 μsec.

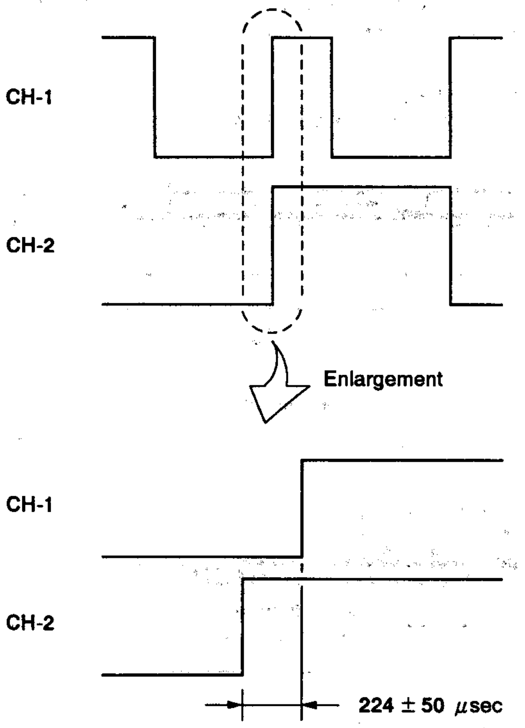


Fig. 3-8. Drum phase lock check

3-4-4. Switching Position Adjustment (VS-63 Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5NSP)
Measurement Point	CH-1: Video input/output terminal CH-2: Pin ④ (RF SWP) of CN204
Measuring Instrument	Oscilloscope
Adjusting Element	RV602
Specified Value	6.5 ± 0.3H (410 ± 20 μsec)

Connection:

1) Connect Pin ⑧ (UN (TEST)) of CN204 to ground with a jumper wire. (TEST mode)
2) Confirm that EDIT switch (S770 on CF-25 board) is off position. (Setting of SP mode)

Adjusting method:

1) Adjust RV602 for 6.5 ± 0.3H (410 ± 20 μsec).

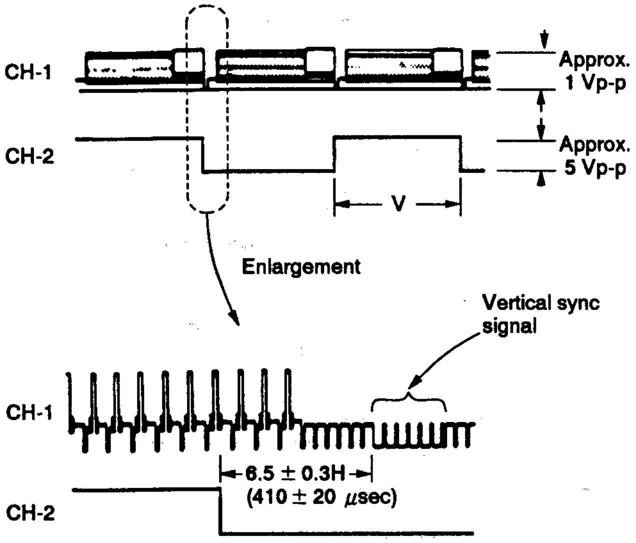


Fig. 3-9. Switching position adjustment

3-5. VIDEO BLOCK ADJUSTMENTS

The adjustment of the video system should in principle follow the adjustment procedure outlined below.
The color video signal supplied from the pattern generator is utilized as the video input signal for the video system adjustment in the recording mode. Make sure that the sync signal and the color burst signal match the specifications given in Set-up for adjustment, as shown in Fig. 3-2.

[Adjustment procedure]

1) Playback frequency characteristics adjustment
2) Flying erase check
3) Crystal oscillator fo adjustment
4) Y/C Separation adjustment
5) IR2 adjustment
6) SYNC AGC adjustment
7) Emphasis input level adjustment
8) PB Y level 1 adjustment
9) PB Y level 2 adjustment
10) Y FM carrier frequency adjustment
11) Y FM deviation adjustment
12) Chroma emphasis fo adjustment
13) REC C RF level adjustment
14) REC Y level adjustment
15) REC ATF level checking

3-5-1. Playback Frequency Characteristics Adjustment (VS-63 Board)

Note: The adjusting element for CH2 is shown in parentheses [ ].

Mode	Playback
Signal	Alignment tape: For frequency characteristics adjustment (WR5-6N)
Measurement Point	CH1: Pin ① [Pin ②] of CN204 EXT TRIG: Pin ④ of CN204
Measuring Instrument	Oscilloscope TRIG SLOPE: +, [–]
Adjusting Element	RV113 [RV112]
Specified Value	3.58 MHz level : 5.5 MHz level =4 : (3 ± 0.3)

Adjusting method:

1) Adjust RV113 [RV112] so that the ratio of the 3.58 MHz level to the 5.5 MHz level of the PB RF output waveform becomes 4: (3 ± 0.3) .

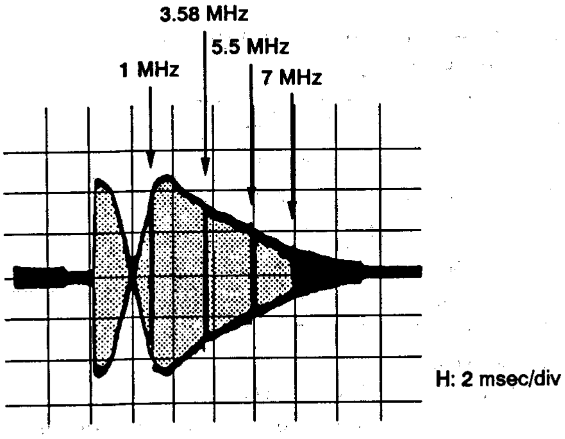


Fig. 3-10. Playback frequency characteristics adjustment

3-5-2. Flying Erase Check (VS-63 Board)

Mode	Recording
Signal	Arbitrary
Measurement Point	Pin ⑮ of CN101 (FE (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: Over 7.0 MHz Voltage: Over 6.0 Vp-p

Note: Be sure to use MP type tape.
(Pin ⑫ of CN602 should be "L".)

Checking method:

1) Confirm that the oscillation frequency is over 7.0 MHz and that the oscillation voltage is over 6.0 Vp-p.

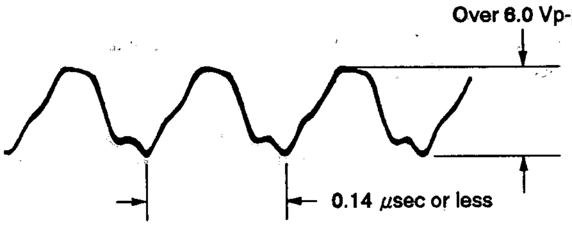


Fig. 3-11. Flying erase check

3-5-3. Crystal Oscillator fo Checking (VS-63 Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5NSP)
Measurement Point	Pin ⑯ of IC203
Measuring Instrument	Frequency counter
Specified Value	3579545 ± 70 Hz

Note: Connect the frequency counter through a buffer of high impedance (approx. 10 MΩ) and low capacitance (10 pF or less).

Checking method:

1) Confirm that the oscillation frequency at Pin ⑯ of IC203 is 3579545 ± 70 Hz.

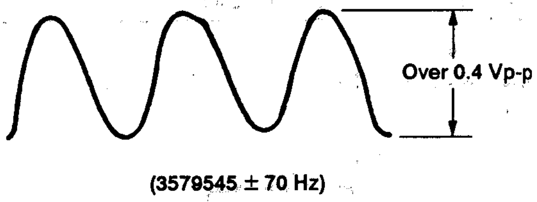


Fig. 3-12. Crystal oscillator fo adjustment

3-5-4. Y/C Separation Adjustment (VS-63 Board)

Mode	Recording
Signal	Color bars
Measurement Point	Any terminal of RV203 (DEV) (Pin ㉕ of IC203)
Measuring Instrument	Oscilloscope
Adjusting Element	RV207
Specified Value	Minimum residual chroma component

Connections:

1) Connect Pin ㊴ of IC203 and ground (Pin (58) or (62) of IC203) with a 10 μF/16V electrolytic capacitor.
(Capacitor negative side to ground)

Adjusting method:

1) Adjust RV207 so that the residual chroma component becomes minimum.

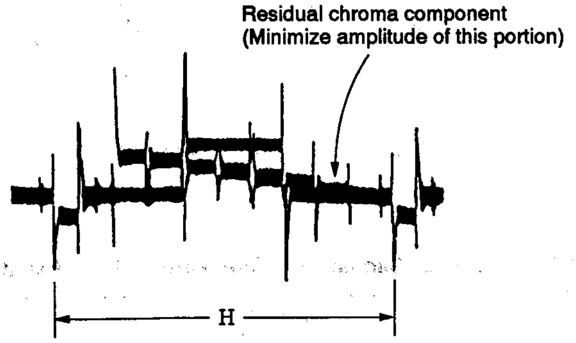

Residual chroma component
(Minimize amplitude of this portion)
H

Fig. 3-13. Y/C separation adjustment

3-5-5. IR2 Adjustment (VS-63 Board)

Mode	Recording
Signal	Color bars
Measurement Point	CH2: Pin ⑧ of IC203 or base of Q229 (BF OUT)
Measuring Instrument	Oscilloscope
Adjusting Element	RV206
Specified Value	6.9 ± 0.2 μsec

Adjusting method:

1) Adjust RV206 so that the pulse width becomes 6.9 ± 0.2 μsec.

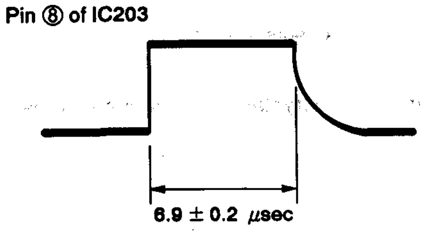


Fig. 3-14. IR2 adjustment

3-5-6. SYNC AGC Adjustment (VS-63 Board)

Mode	Recording
Signal	Color bar
Measurement Point	Pin ㊾ of IC203
Measuring Instrument	Oscilloscope
Adjusting Element	RV201
Specified Value	0.50 ± 0.025 Vp-p

Adjusting method:

1) Adjust RV201 for 0.50 ± 0.025 Vp-p.

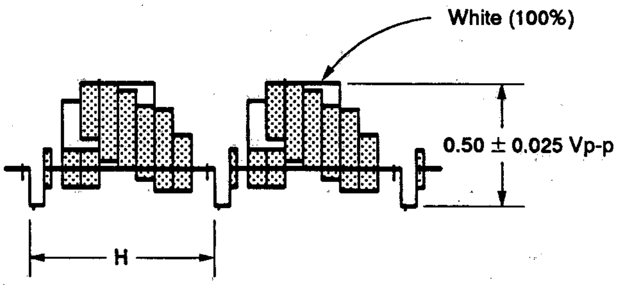


Fig. 3-15. SYNC AGC adjustment

3-5-7. Emphasis Input Level Adjustment (VS-63 Board)

Mode	Recording
Signal	Color bar
Measurement Point	Pin (54) of IC203
Measuring Instrument	Oscilloscope
Adjusting Element	RV205
Specified Value	0.50 ± 0.025 Vp-p

Adjusting method:

1) Adjust RV205 for 0.50 ± 0.025 Vp-p.
2) Be sure to perform "PB Y Level Adjustment" after "Emphasis Input Level Adjustment".

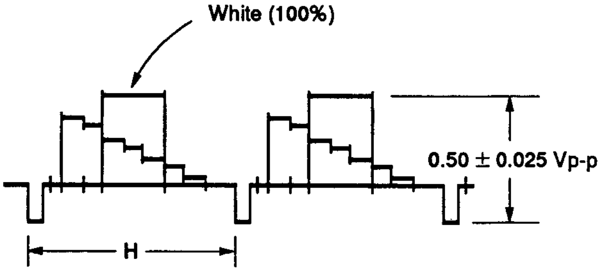


Fig. 3-16. Emphasis input level adjustment

3-5-8. PB Y Level 1 Adjustment (VS-63 Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5NSP) color bar section
Measurement Point	Pin ㊼ of IC203
Measuring Instrument	Oscilloscope
Adjusting Element	RV202
Specified Value	0.50 ± 0.025 Vp-p

Adjusting method:
1) Adjust RV202 for 0.50 ± 0.025 Vp-p.
2) Be sure to perform "PB Y Level 2 Adjustment" after "PB Y Level 1 Adjustment".

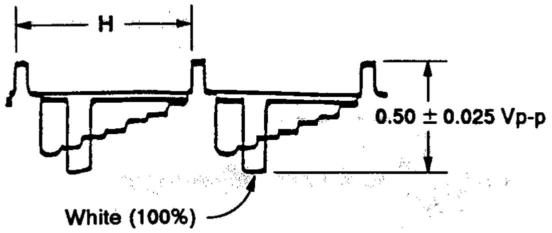

H
0.50 ± 0.025 Vp-p
White (100%)

Fig. 3-17. PB Y level 1 adjustment

3-5-9. PB Y Level 2 Adjustment (VS-63 Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5NSP) Color bar section
Measurement Point	VIDEO input/output terminal
Measuring Instrument	Oscilloscope
Adjusting Element	RV208
Specified Value	$1.00^{+0.025}_{-0.05}$ Vp-p

Note: 1) Terminate VIDEO input/output terminal (J901) at 75Ω.
2) Make sure that "PB Y Level 1 Adjustment" has been completed.
3) Make sure that "Emphasis Input Level Adjustment" has been completed.

Adjusting method:
1) Adjust RV208 for $1.00^{+0.025}_{-0.05}$ Vp-p.

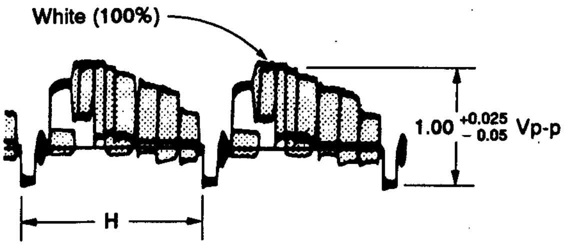

White (100%)
1.00 +0.025 −0.05 Vp-p
H

Fig. 3-18. PB Y level 2 adjustment

3-5-10. Y FM Carrier Frequency Adjustment (VS-63 Board)

Mode	Recording
Signal	No signal
Measurement Point	TP161 (emitter of Q237)[Note]
Measuring Instrument	Frequency counter
Adjusting Element	RV204
Specified Value	4.38 ± 0.04 MHz

Note: TP161 is the check land. (See Fig. 3-20.)

Adjusting method:
1) Adjust RV204 for 4.38 ± 0.04 MHz.
2) Perform "Deviation Adjustment".

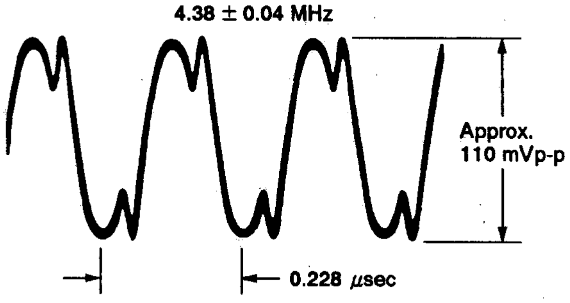

4.38 ± 0.04 MHz
Approx. 110 mVp-p
0.228 μsec

Fig. 3-19. Y FM carrier frequency adjustment

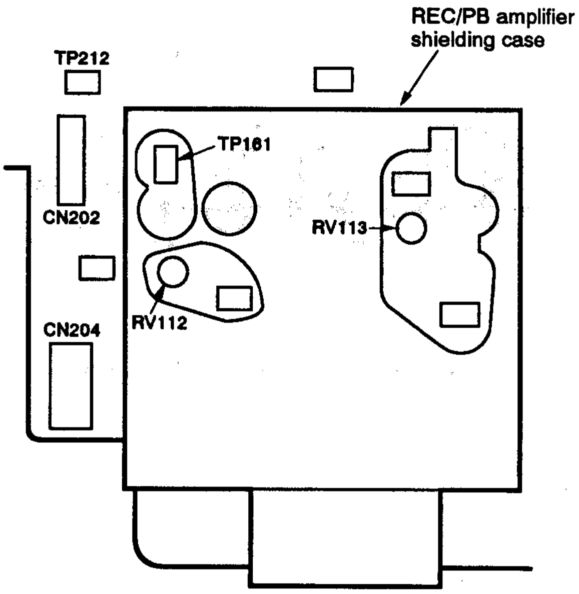

REC/PB amplifier shielding case
TP212
TP161
CN202
RV113
CN204
RV112

Fig. 3-20.

3-5-11. Y FM Deviation Adjustment (VS-63 Board)

Mode	Recording and playback
Signal	Color bar
Measurement Point	VIDEO input/output terminal
Measuring Instrument	Oscilloscope
Adjusting Element	RV203
Specified Value	Playback level is 1.00 ± 0.05 Vp-p

Note: 1) Confirm that "Emphasis Input Level Adjustment", "PB Y Level Adjustment" and "Y FM Carrier Frequency Adjustment" have been completed.
2) Terminate VIDEO input/output terminal (J901) at 75Ω.

Adjusting method:
1) Record the color bar signal.
2) Playback the recorded signal.
3) Confirm the playback output.
Specified value: 1.00 ± 0.05 Vp-p
4) If not meet the specified value, repeat 1) to 3) after turning RV203 in the following manner.

	Rotation direction of RV203
When smaller than specified value	Clockwise (↻)
When larger than specified value	Counterclockwise (↺)

Table 3-2.

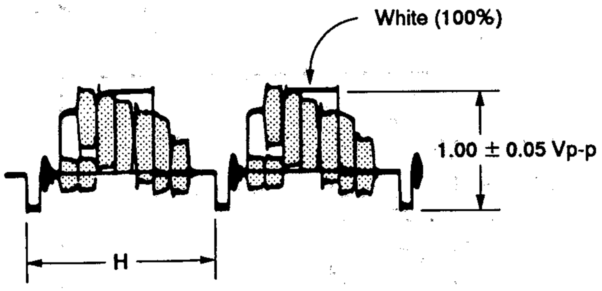


Fig. 3-21. Y FM deviation adjustment

3-5-12. Chroma Emphasis fo Adjustment (VS-63 Board)

Mode	Recording
Signal	Color bar
Measurement Point	TP212 (emitter of Q241)$^{\text{Note}}$
Measuring Instrument	Oscilloscope
Adjusting Element	FL201
Specified Value	Minimum fo component

Note: TP212 is the check land (See Fig. 3-20.)

Adjusting method:
1) Adjust FL201 so that the amplitude of flat red portion of the chroma signal becomes minimum.

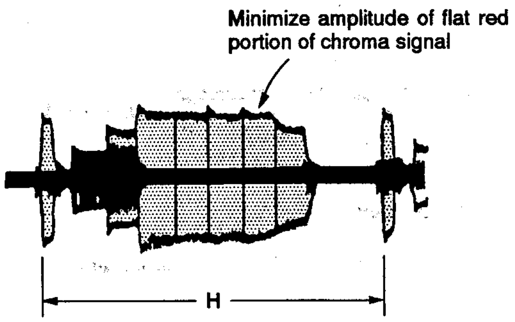


Fig. 3-22. Chroma emphasis fo adjustment

3-5-13. REC C RF Level Adjustment (VS-63 Board)

Mode	Recording
Signal	Color bar
Measurement Point	TP212 (emitter of Q241)^Note
Measuring Instrument	Oscilloscope
Adjusting Element	RV210
Specified Value	194 ± 10 mVp-p

Note: TP212 is the check land. (See Fig. 3-20.)

Adjusting method:

1) Adjust RV210 so that the amplitude of flat red portion of the chroma signal becomes 194 ± 10 mVp-p.

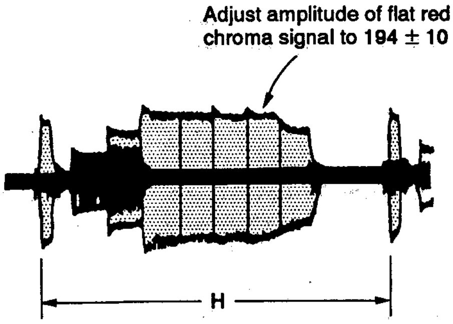

Adjust amplitude of flat red portion of chroma signal to 194 ± 10 mVp-p.
H

Fig. 3-23. REC C RF level adjustment

3-5-14. REC Y Level Adjustment (VS-63 Board)

Mode	Recording
Signal	No signal
Measurement Point	TP161 (emitter of Q237)^Note
Measuring Instrument	Oscilloscope
Adjusting Element	RV209
Specified Value	110 ± 5 mVp-p

Note: TP161 is the check land. (See Fig. 3-20.)

Adjusting method:

1) Adjust RV209 for 110 ± 5 mVp-p.

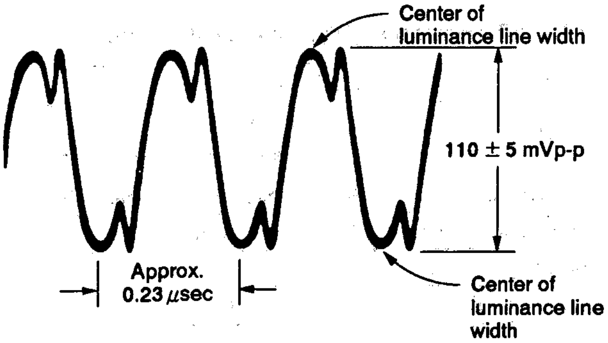

Center of luminance line width
110 ± 5 mVp-p
Approx. 0.23 μsec
Center of luminance line width

Fig. 3-24. REC Y level adjustment

3-5-15. REC ATF Level Checking (VS-63 Board)

Mode	Recording
Signal	No signal
Measurement Point	Emitter of Q543
Measuring Instrument	Oscilloscope
Specified Value	400 ± 40 mVp-p

Checking method:

1) Confirm that the REC ATF signal level is 400 ± 40 mVp-p.

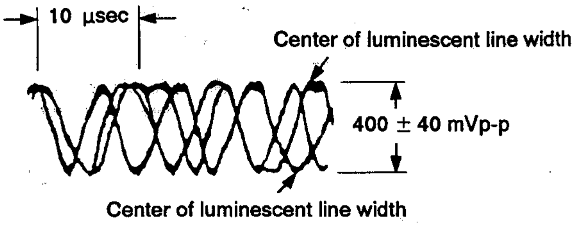

10 μsec
Center of luminescent line width
400 ± 40 mVp-p
Center of luminescent line width

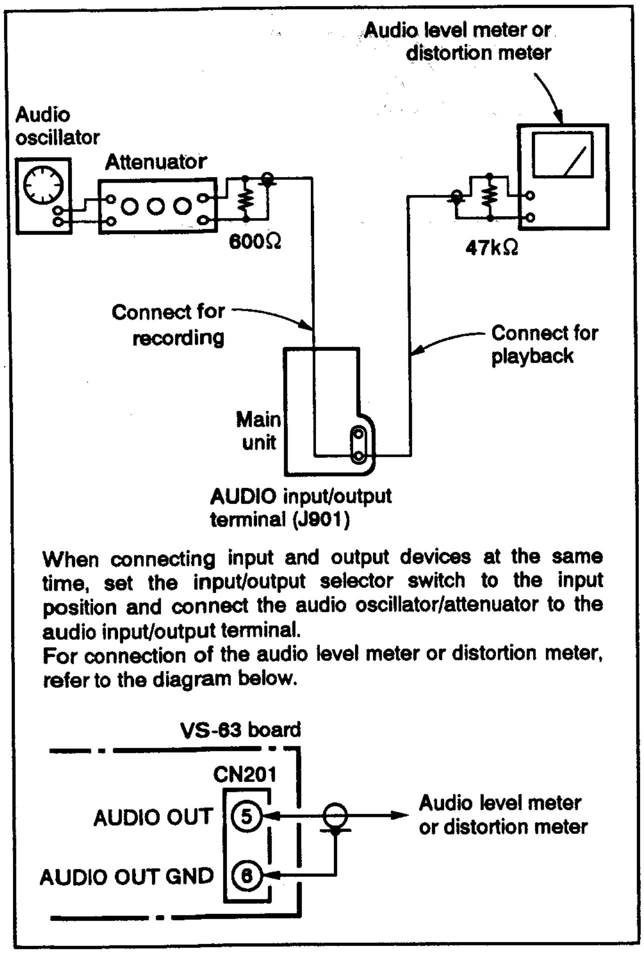
Fig. 3-25. REC ATF level checking

3-6. AUDIO SYSTEM ADJUSTMENT

- Perform adjustment with the color bar signal used as the video input signal.

[Connection of audio measuring instruments]
In addition to the video system measuring instruments, connect the audio system measuring instruments as shown in the figure below, and set the power switch to the video position for adjustment.
Set the input/output selector switch according to the mode as follows.

- Input position ················· Recording mode
- Output position ················· Playback mode


Audio level meter or distortion meter
Audio oscillator
Attenuator
600Ω
47kΩ
Connect for recording
Connect for playback
Main unit
AUDIO input/output terminal (J901)

When connecting input and output devices at the same time, set the input/output selector switch to the input position and connect the audio oscillator/attenuator to the audio input/output terminal.
For connection of the audio level meter or distortion meter, refer to the diagram below.

VS-63 board
CN201
AUDIO OUT ⑤
AUDIO OUT GND ⑥
Audio level meter or distortion meter

Fig. 3-26.

3-6-1. AFM Carrier Frequency Adjustment (AU-92 Board)

Mode	Recording
Signal	Non-signal
Measurement Point	Pin ⑬ of IC401(REC AFM) (JL419)
Measuring Instrument	Frequency counter
Adjusting Element	RV401
Specified Value	1.500 ± 0.002 MHz

Note: Connect the frequency counter through a buffer amplifier (oscilloscope, etc.) of high impedance and low capacitance.

Adjustment method:
1) Turn OFF the audio oscillator output.
2) Adjust RV401 so that the AFM carrier frequency is 1.500 ± 0.002 MHz.

3-6-2. REC AFM Carrier Level Check (AU-92 Board)

Mode	Recording
Signal	Non-signal
Measurement Point	Pin ⑧ of CN401 (REC AFM)
Measuring Instrument	Oscilloscope
Specified Value	48 ± 8 mVp-p

Checking method:
1) Confirm that the level is 48 ± 8 mVp-p.

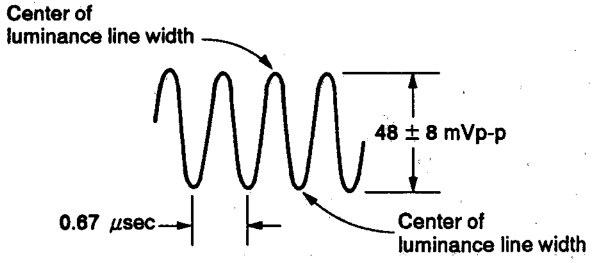

Center of luminance line width
48 ± 8 mVp-p
0.67 µsec
Center of luminance line width

Fig. 3-27. REC AFM carrier level

3-6-3. AFM Deviation Adjustment (AU-92 Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5NSP)
Measurement Point	Audio input/output terminal (J901)
Measuring Instrument	Audio level meter
Adjusting Element	RV402
Specified Value	–7.5 ± 0.2 dBs

Checking method:
1) Adjust RV402 so that the audio output level is –7.5 ± 0.2 dBs.

3-6-4. E-E Output Level Check

Mode	E-E
Signal	400 Hz, –7.5 dBs
Measurement Point	TP403
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 2 dBs

Checking method:

1) Make sure that the audio output level is –7.5 ± 2 dBs.

3-6-5. Overall Level Characteristics Check

Mode	Self-recording and playback
Signal	400 Hz, –7.5 dBs
Measurement Point	Audio input/output terminal (J901)
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 3 dBs

Checking method:

1) Record the signal.
2) Playback the recorded section.
3) Make sure that the audio output level is –7.5 ± 3 dBs.

3-6-6. Overall Frequency Characteristics Check

Mode	Self-recording and playback
Signal	Ⓐ 400 Hz, –17.5 dBs Ⓑ 30 Hz, –17.5 dBs Ⓒ 14 kHz, –17.5 dBs
Measurement Point	Audio input/output terminal (J901)
Measuring Instrument	Audio level meter
Specified Value	With the 400 Hz playback output level as 0 dB, the playback output level of 30 Hz and 14 kHz is 0 ± 3 dB

Checking method:

1) Record signal Ⓐ through Ⓒ in order.
2) Playback the recorded sections.
3) With the 400 Hz playback output level as 0 dB, confirm that the playback output level of 30 Hz and 14 kHz is 0 ± 3 dB.

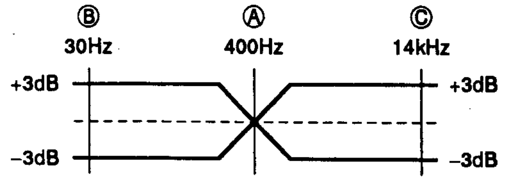


Fig. 3-28. AFM overall frequency characteristics

3-6-7. Overall Distortion Check

Mode	Self recording and playback
Signal	400 Hz, –7.5 dBs
Measurement Point	Audio input/output terminal (J901)
Measuring Instrument	Distortion meter
Specified Value	Less than 0.5% *1

Checking method:

1) Record the signal.
2) Playback the recorded section.
3) Confirm that the distortion is less than 0.5%. *1
   *1 Value when 200 Hz to 6 kHz 18dB/oct BPF is used.
   When the filter is not used ...... less than 1.0%

3-6-8. Overall Noise Level Check

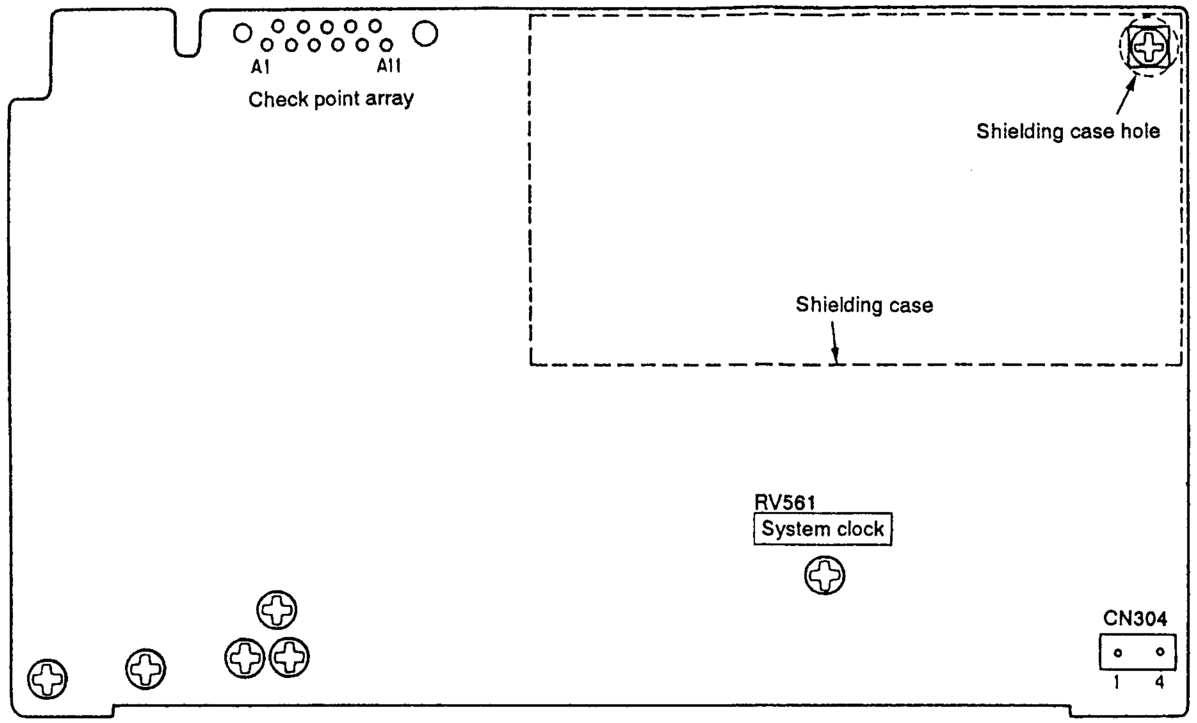
Mode	Self-recording and playback
Signal	No signal (shorting plug is inserted into audio input terminal)
Measurement Point	Audio input/output terminal (J901)
Measuring Instrument	Audio level meter
Specified Value	Less than – 67.5 dBs*2

Checking method:

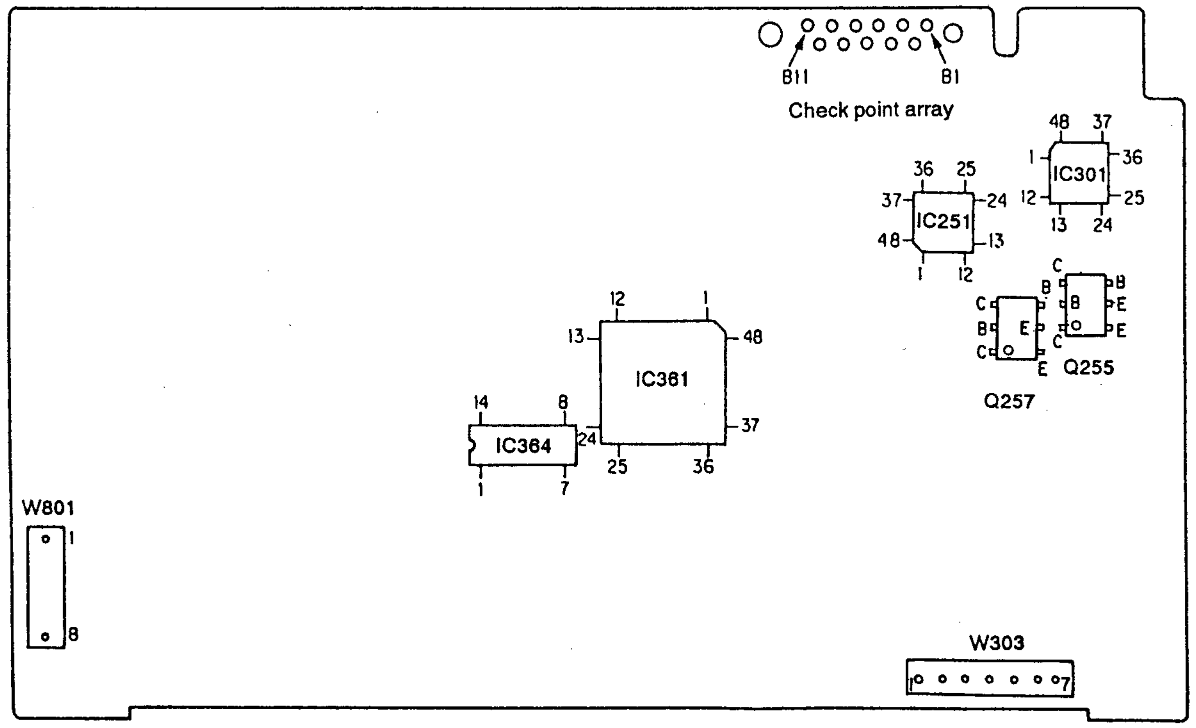
1) Record the signal.
2) Playback the recorded section.
3) Make sure that the noise level is less than –67.5 dBs. *2
   *2 Value when IHF-A hearing correction filter is used.

3-7. ARRANGEMENT DIAGRAMS FOR ADJUSTMENT PARTS

VC-81 BOARD (COMPONENT SIDE)
(Also illustrated on page 40.)

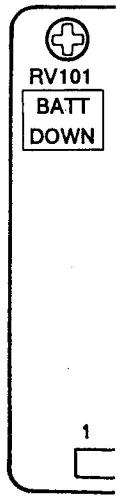

A1
A11
Check point array
Shielding case hole
Shielding case
RV561
System clock
CN304
1
4

VC-81 BOARD (CONDUCTOR SIDE)
(Also illustrated on page 40.)


B11
B1
Check point array
48 37
1
36
IC301
12
25
13 24
36 25
37
24
IC251
48
13
1 12
C
B
E
B
E
C
B
E
C
E
Q255
Q257
12
1
13
48
IC361
37
25
36
14
8
IC364
24
1
7
W801
1
8
W303
1
7

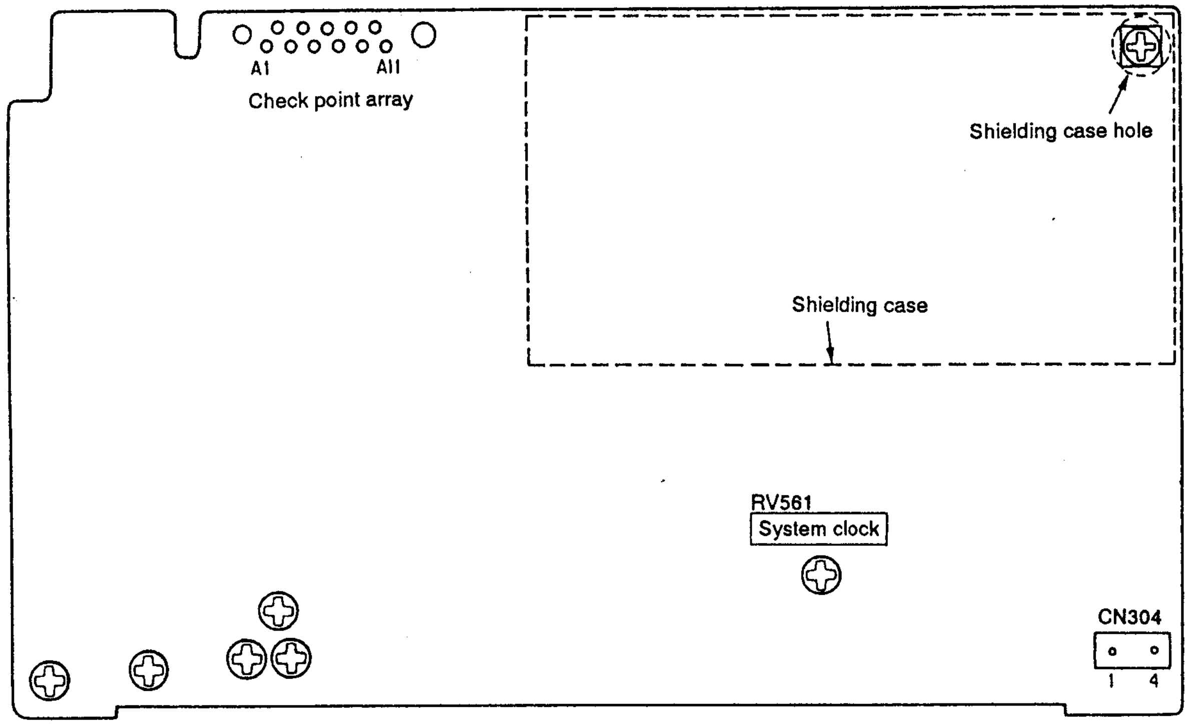
VS-63 B

DD-31 B

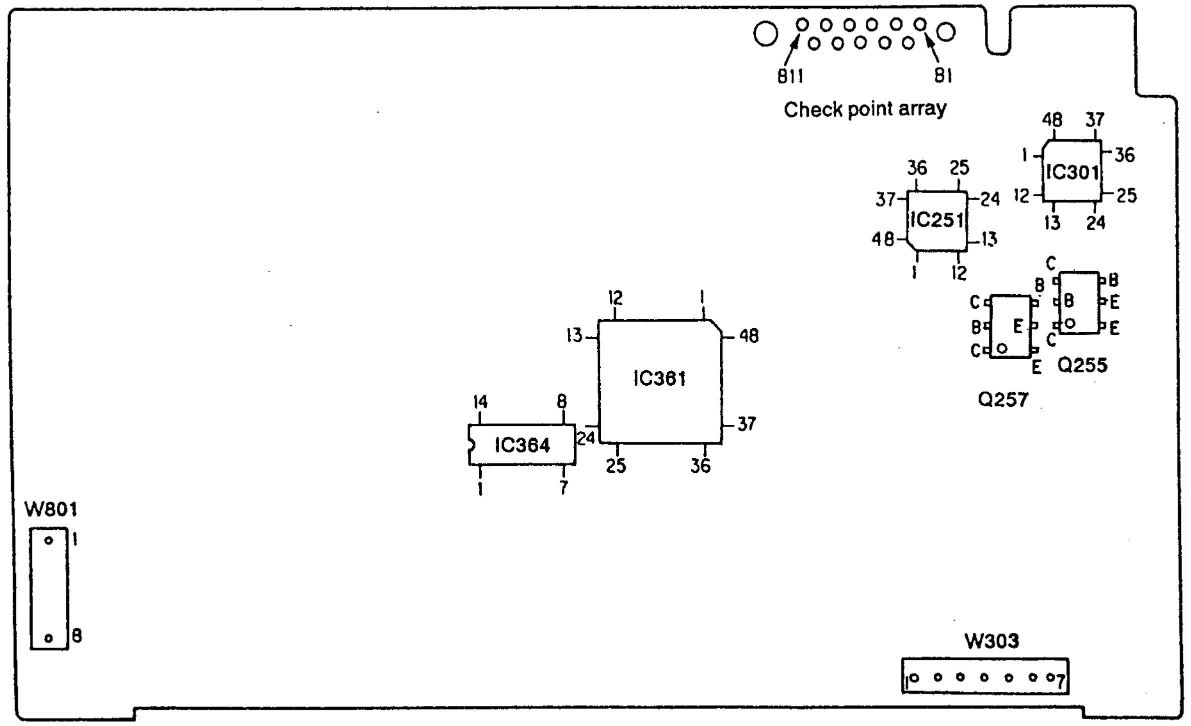

RV101
BATT
DOWN
1

3-7. ARRANGEMENT DIAGRAMS FOR ADJUSTMENT PARTS

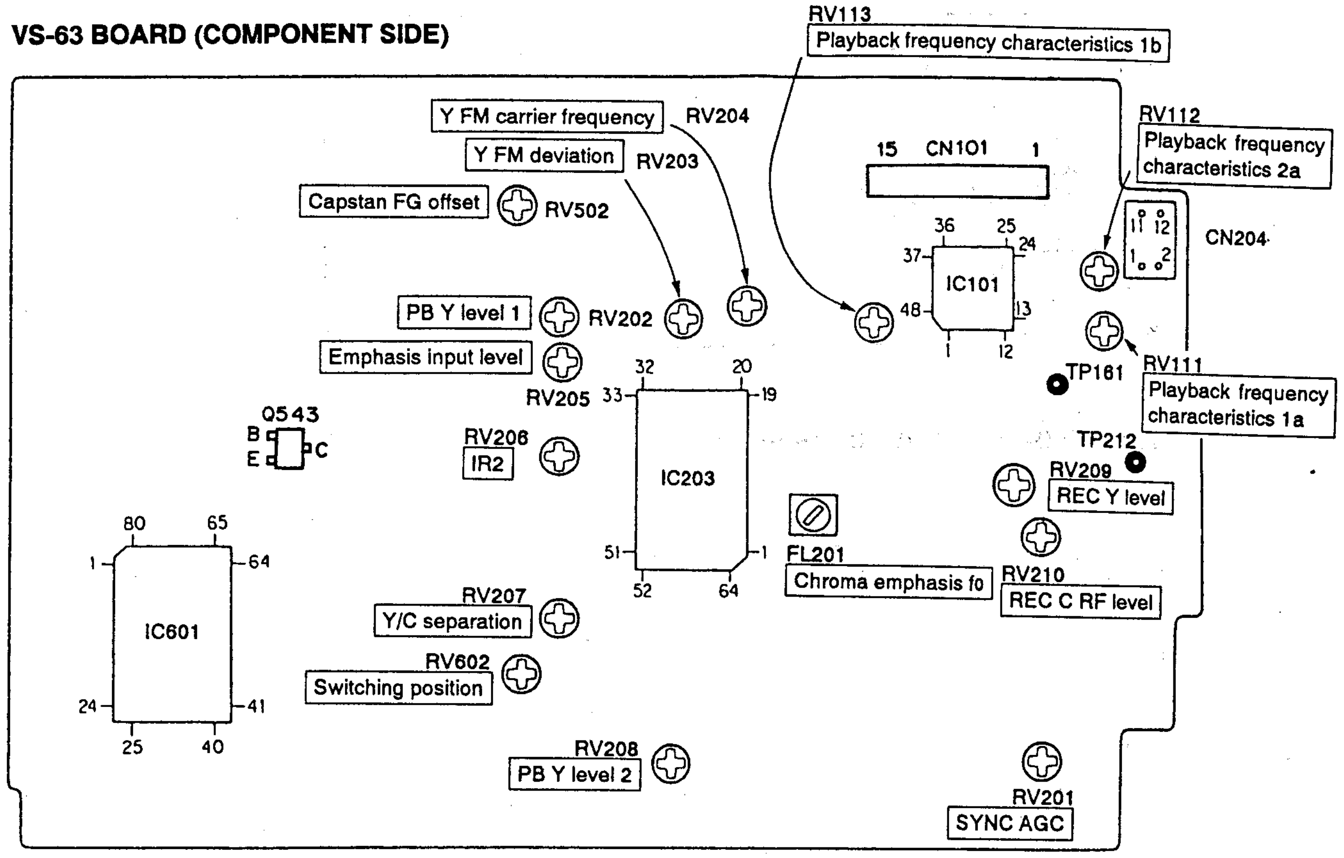
VC-81 BOARD (COMPONENT SIDE)
(Also illustrated on page 40.)


A1
A11
Check point array
Shielding case hole
Shielding case
RV561
System clock
CN304
1
4

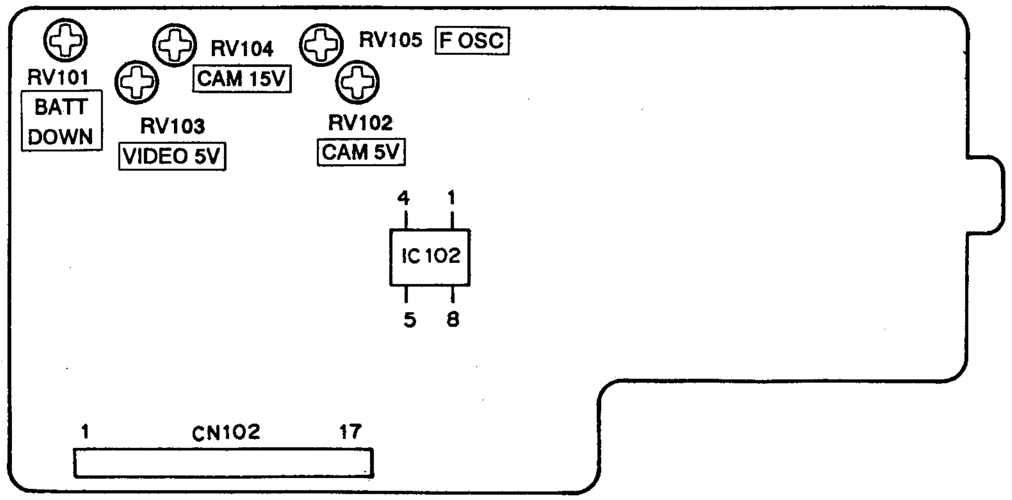
VC-81 BOARD (CONDUCTOR SIDE)
(Also illustrated on page 40.)

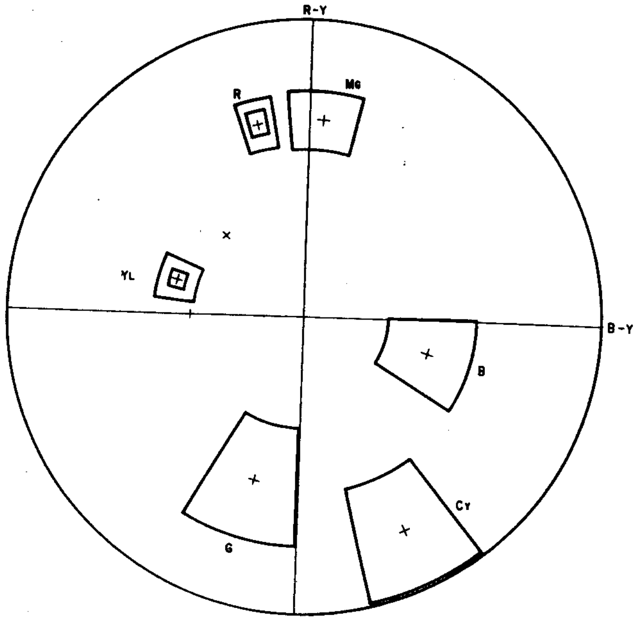

B11
B1
Check point array
48 37
1
36
IC301
12
25
13 24
36 25
37
24
IC251
48
13
1 12
C
B
B
E
B
E
E
C
B
C
C
E
Q255
Q257
12 1
13
48
IC361
37
25 36
14 8
IC364
24
1 7
W801
1
8
W303
1
7

VS-63 BOARD (COMPONENT SIDE)

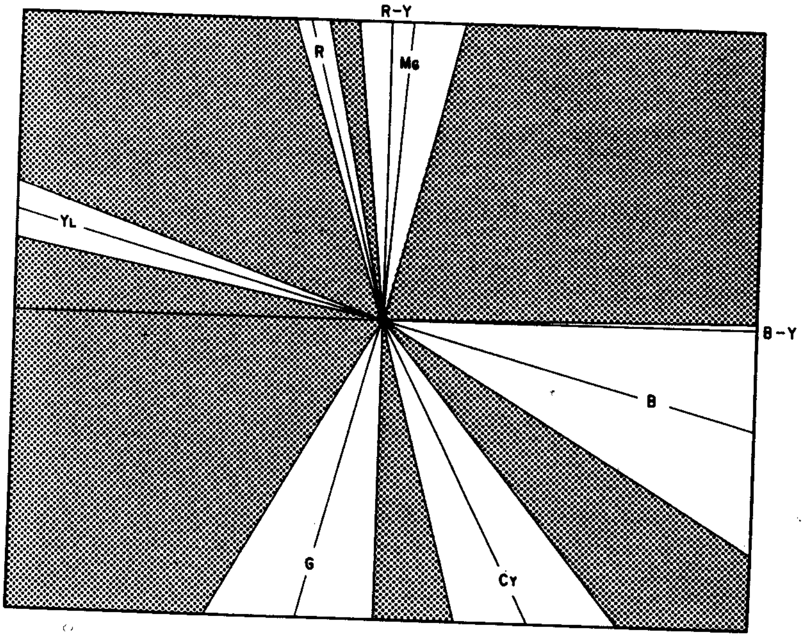

RV113
Playback frequency characteristics 1b
Y FM carrier frequency
RV204
Y FM deviation
RV203
Capstan FG offset
RV502
15 CN101 1
RV112
Playback frequency characteristics 2a
CN204
36 25
37
24
IC101
48
13
1 12
11 12
1 2
PB Y level 1
RV202
Emphasis input level
RV205
32 20
33
19
IC203
51
1
52 64
TP161
RV111
Playback frequency characteristics 1a
TP212
Q543
B
E
C
RV206
IR2
RV209
REC Y level
80 65
1
64
IC601
24
41
25 40
FL201
Chroma emphasis f0
RV210
REC C RF level
RV207
Y/C separation
RV602
Switching position
RV208
PB Y level 2
RV201
SYNC AGC

DD-31 BOARD (COMPONENT SIDE)


RV101
BATT DOWN
RV104
CAM 15V
RV105
F OSC
RV103
VIDEO 5V
RV102
CAM 5V
4 1
IC 102
5 8
1
CN102
17


R-Y
R
Mg
YL
B-Y
B
G
CY

For Vectorscope


R-Y
R
Mg
YL
B-Y
B
G
CY

For Oscilloscope

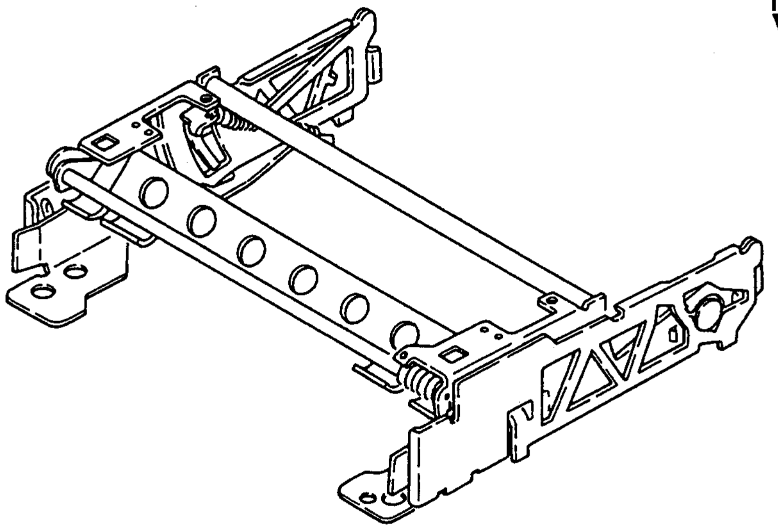
8mm Video MECHANICAL ADJUSTMENT MANUAL III

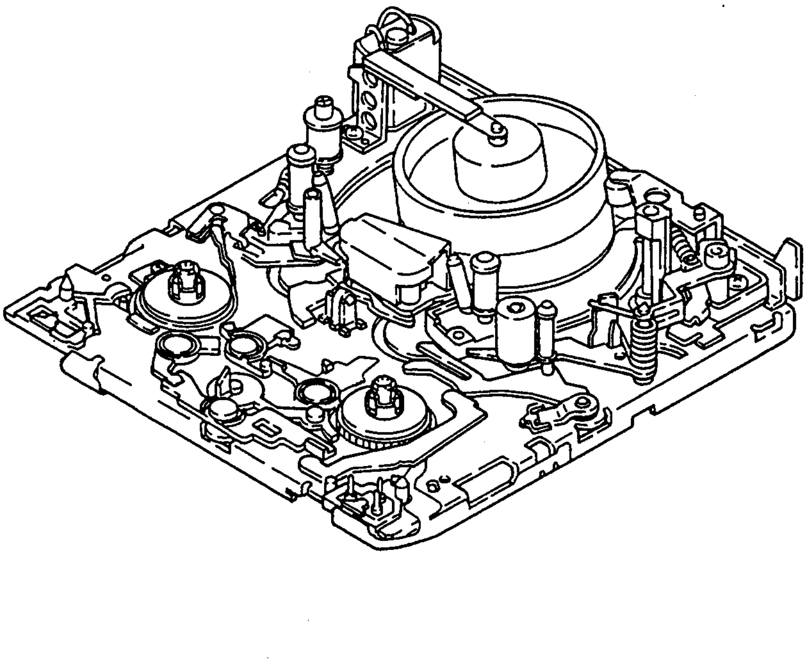
U MECHANISM

Video 8

Please use in conjunction with the SERVICE MANUAL.

V01571





8 MECHANISM DECK

SONY®

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1. PREPARATIONS FOR MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

Note: For removal of the cabinet, the boards, the cassette compartment, etc., refer to the service guides.

1-1. OPERATION WITHOUT CASSETTE COMPARTMENT ASSEMBLY AND TAPE

Note: The unit will not work if exposed to a strong light.

1-1-1. How to Trigger the Loading Operation (See Fig. 1-1.)

1) Supply power to the unit after removing the cabinet, the camera block, the cassette compartment assembly, etc., as indicated in the service guides. (This will enable operation of the mechanical deck.)
2) Cover the LED assembly with an opaque cap, etc. ❶.
3) Attach a piece of tape to the RECOG switch ❷ so that the pin is held down.
4) Push the EJECT lever ❸ in the direction of the arrow Ⓐ.

1-1-2. Setting the Playback Mode (See Fig. 1-1.)

1) Follow the procedures in section 1-1-1. above.
2) Put the rubber band ❹ around the S and T reels.
3) Press the PLAY switch of unit, then push the tension regulator arm assembly ❺ in the direction of the arrow Ⓑ when the T reel starts to rotate (the tension regulator band will be released, and the S reel will start rotating).
4) To stop operation, press the STOP switch.

1-1-3. Eject Operation (See Fig. 1-1.)

1) To eject, turn the EJECT switch on.

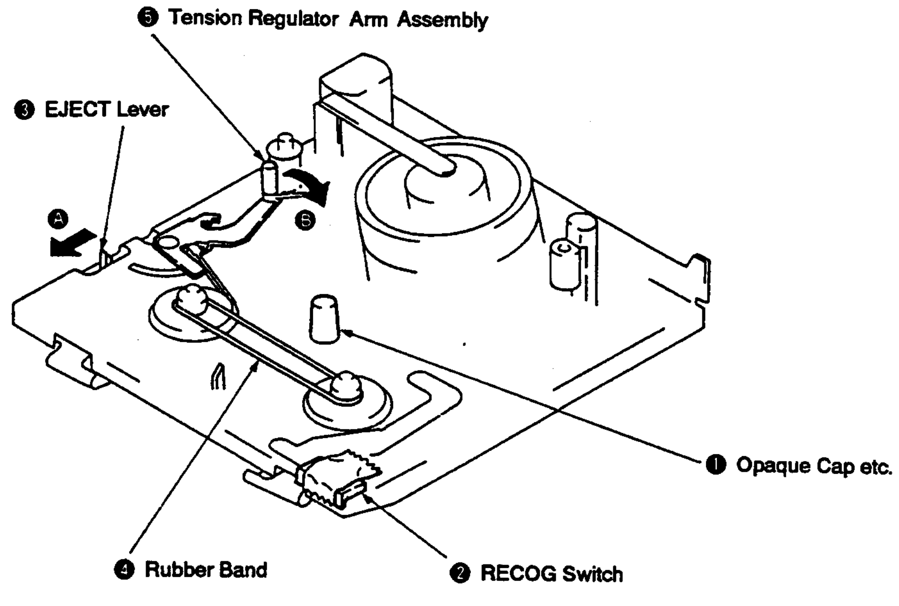
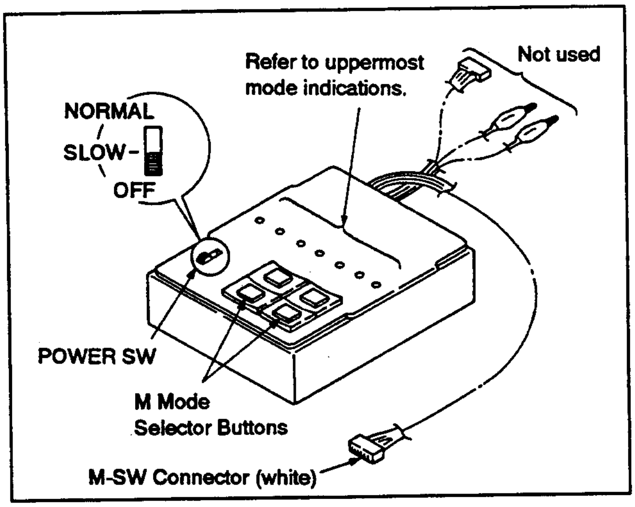


Fig. 1-1.

1-2. THE MODE SELECTOR

1-2-1. Name of Each Part (external) (See Fig. 1-2.)

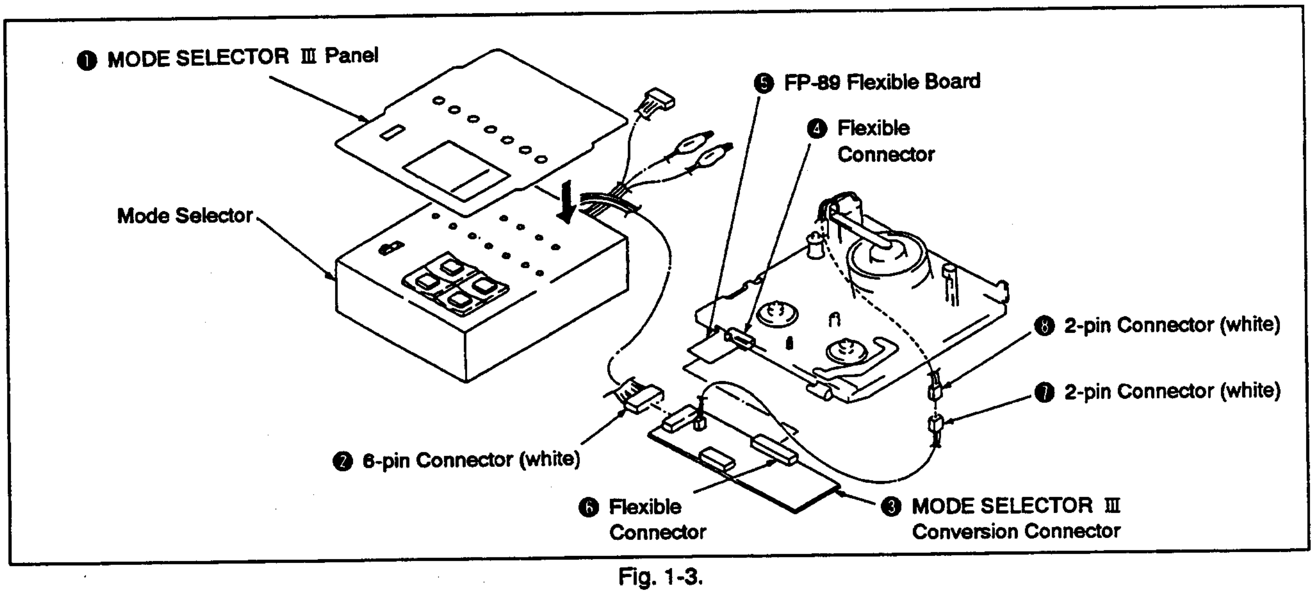


Refer to uppermost mode indications.
Not used
NORMAL
SLOW
OFF
POWER SW
M Mode Selector Buttons
M-SW Connector (white)

Fig. 1-2.

1-2-2. Connections (See Fig. 1-3.)

1) Mount the MODE SELECTOR III panel (Ref. No. J-9) ❶ onto the mode selector.
2) Attach the conversion connector (Ref. No. J-8) ❸ of MODE SELECTOR III to the 6-pin connector (white) ❷ of the mode selector M-SW.
3) Remove the FP-89 flexible board ❺ from the flexible connector ❹.
4) Attach the FP-89 flexible board ❺ to the flexible connector ❻ of the MODE SELECTOR III conversion connector ❸, then attach the 2-pin connector (white) ❽ of the loading motor to the 2-pin connector (white) ❼.



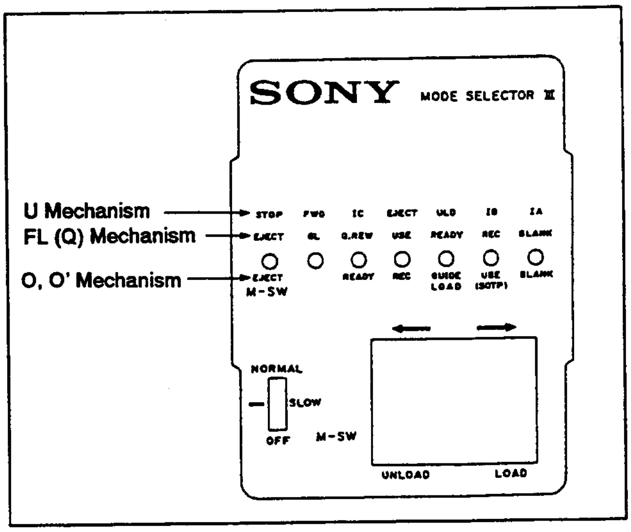
❶ MODE SELECTOR Ⅲ Panel
Mode Selector
❺ FP-89 Flexible Board
❹ Flexible Connector
❽ 2-pin Connector (white)
❼ 2-pin Connector (white)
❷ 6-pin Connector (white)
❻ Flexible Connector
❸ MODE SELECTOR Ⅲ Conversion Connector

Fig. 1-3.

1-2-3. Handling (See Figs. 1-2. and 1-4.)

- Use only the M mode selector buttons.
- Refer to mode indications on the uppermost part of the MODE SELECTOR III panel.
- If the right M mode selector button is kept pressed, the lit indication will change in the order of EJECT → (IA) → ULD → (IB) → STOP → (IC) → FWD.
- To change modes in the reverse direction (from FWD to EJECT), press the left selector button.

Note: For this U mechanism, the uppermost indicators on the MODE SELECTOR III panel are used. The IA, IB and IC indications light up during mode changes.



SONY
MODE SELECTOR Ⅲ
U Mechanism
FL (Q) Mechanism
O, O' Mechanism
STOP
FWD
IC
EJECT
ULD
IB
IA
EJECT
FL
Q.REW
USE
READY
REC
BLANK
EJECT
M-SW
READY
REC
GUIDE LOAD
USE (SOTP)
BLANK
NORMAL
SLOW
OFF
M-SW
UNLOAD
LOAD

Fig. 1-4.

2. PERIODICAL CHECK AND MAINTENANCE (See Fig. 2-1.)

The following periodical check and maintenance procedures are necessary to ensure proper operation and to protect the tapes as well as the unit, and the following maintenance procedures must be always carried out after repairing regardless of how long the unit has been used.

2-1. ROTARY DRUM ASSEMBLY CLEANING

1) While pressing a piece of chamois leather (Ref. No. J-2) moistened in cleaning fluid (Ref. No. J-1) lightly against the rotary drum, turn the rotary upper drum slowly counter-clockwise with your fingers.

Note: Do not drive the drum with the motor, and do not turn it clockwise.
Do not move the chamois leather vertically against the head tip; this can damage the head tip. Strictly follow the cleaning instructions above.

2-2. TAPE PATH CLEANING

1) Set the cassette compartment assembly to the eject state, or remove it. Then clean the tape path (guides No. 1 to 7, capstan shaft, pinch rollers) with a piece of chamois leather moistened in cleaning fluid (See Fig. 2-1).

2-3. DRIVE SYSTEM CLEANING

1) Clean the drive system (timing belt, reel table surface) with a piece of cloth moistened in cleaning fluid.

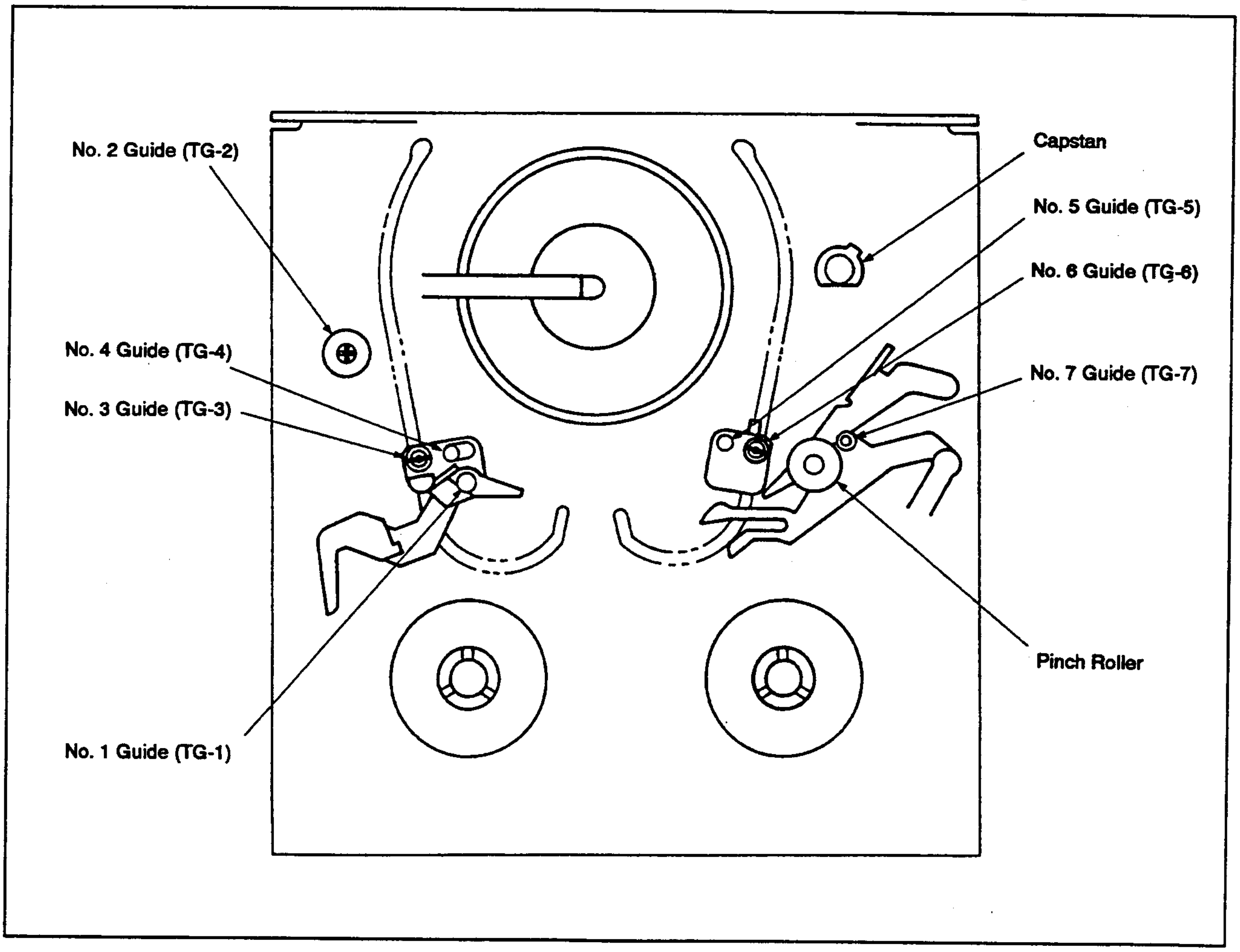


Fig. 2-1.

2-4. PERIODICAL CHECK ITEMS

○Cleaning ◎Lubrication ☆Check

Maintenance and Check Item		Operation time (H)										Remarks
		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	
Cleaning and Demagnetizing	Tape path surfaces Cleaning	○	○	○	○	○	○	○	○	○	○	Do not oil.
	Rotary drum assembly cleaning and demagnetizing	○	○	○	○	○	○	○	○	○	○	Do not oil.
Drive System	Relay belt (short)	–	☆	–	☆	–	☆	–	☆	–	☆	3-728-866-01
	Relay belt (long)	–	☆	–	☆	–	☆	–	☆	–	☆	3-728-865-01
	Capstan shaft	–	◎	–	◎	–	◎	–	◎	–	◎	Take care that no oil gets on tape path surfaces.
	Idler pulley axle	–	◎	–	◎	–	◎	–	◎	–	◎	
	Loading motor	–	☆	–	☆	–	☆	–	☆	–	☆	1-541-612-11
Performance Check	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	–	☆	–	☆	–	☆	–	☆	–	☆	
	Brake system	–	☆	–	☆	–	☆	–	☆	–	☆	
	FWD, RVS torque measurement	–	☆	–	☆	–	☆	–	☆	–	☆	

Notes: When overhauling the unit, perform parts replacement referring to the table above.

Regarding Oil:

- Always use the specified oil (using oil of different viscosity, etc. can cause troubles of several kinds).
  Specified oil: Part No. 7-661-018-01
  (Mitsubishi Diamond Oil Hydrofluid EP56)
- Be sure that no dirt is mixed in the oil to be used on axle bearings. Use of dirty oil can result in bearing wear and burning.
- By "one drop of oil" is meant the quantity of oil adhering to the end of a a 2mm-diameter rod as shown in Fig. 2-2.

On grease:

- Use the specified grease.
  Grease: Part No. 7-662-010-08
  (Sony grease SGL-701)

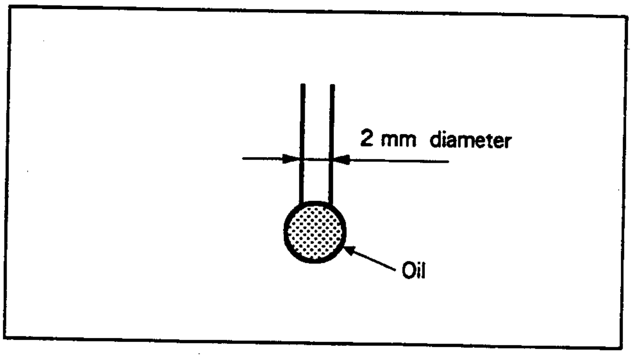


Fig. 2-2.

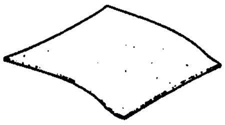
2-5. SERVICING TOOLS

Ref. No.	Name	Part Code	Marking	Application, etc.
J-1	Cleaning fluid	Y-2031-001-0	–	
J-2	Chamois cloth	2-034-697-00	–	
J-3	Head demagnetizer	Commercially available	–	
J-4	Dental mirror Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-5	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-6	FWD/RVS takeup torque cassette	J-6080-824-A	GD-2086	
J-7	Rotary drum jig	(Attached to the maintenance rotary upper drum)		
J-8	Mode selector III conversion connector	J-6082-021-A		General
J-9	Mode selector III panel	J-6082-023-A		General
J-10	Mode selector	J-6080-825-A		General
J-11	Hexagonal wrench detection (0.89 mm) or L wrench (0.89 mm)	7-700-766-01 7-700-736-06		Tape path
J-12	Sony grease (SGL-701)	7-662-010-08		

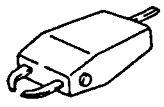
Other devices: Oscilloscope
Analog tester (20 kΩ)

J-1

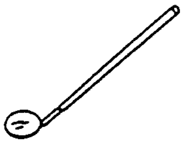
J-2



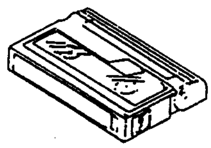
J-3



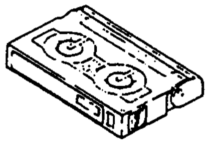
J-4



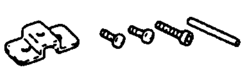
J-5



J-6

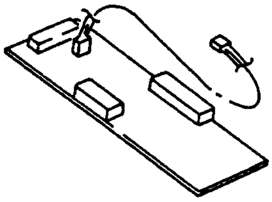


J-7

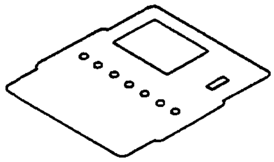


(Attached to the maintenance rotary upper drum)

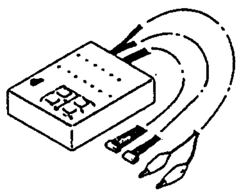
J-8



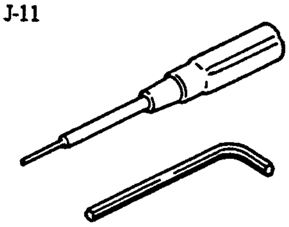
J-9



J-10



J-11



J-12

3. MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

Notes:
- Use the mode selector (Ref. No. J-10) for procedures in this chapter.
- Modes within a frame ☐ are those set by pressing the buttons of the mode selector.

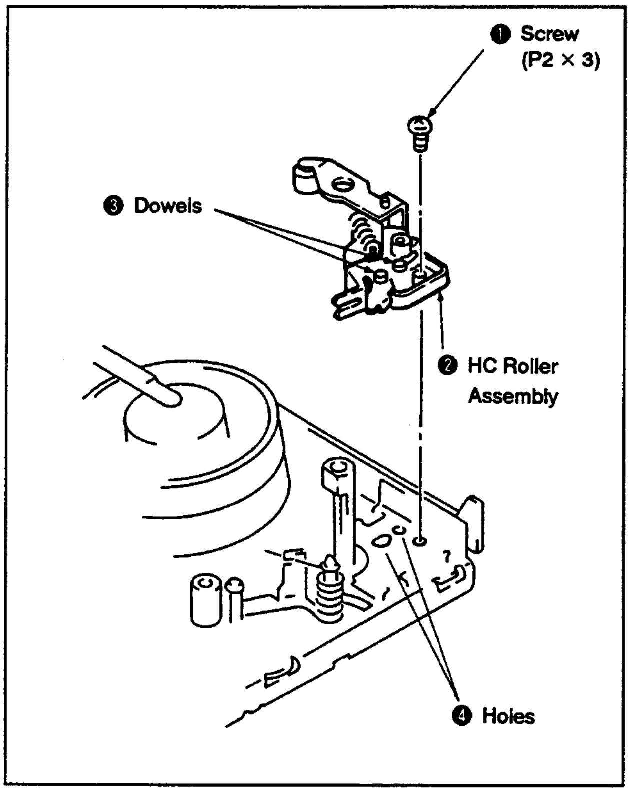
3-1. HC ROLLER ASSEMBLY

1. Removal (See Fig. 3-1.)

1) Remove the screw ❶, then remove the HC roller assembly ❷.

2. Installation (See Fig. 3-1.)

1) Align the two dowels ❸ attached to the HC roller assembly ❷ with the two holes ❹ in the mechanism chassis.
2) Secure the HC roller assembly ❷ with the screw ❶.



❶ Screw (P2 × 3)
❸ Dowels
❷ HC Roller Assembly
❹ Holes

Fig. 3-1.

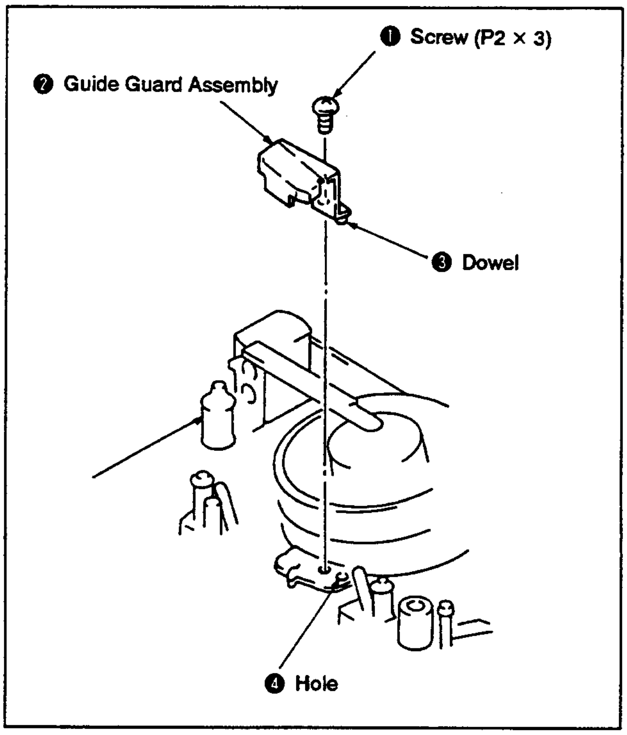
3-2. GUIDE GUARD ASSEMBLY

1. Removal (See Fig. 3-2.)

Remove the screw ❶, then remove the guide guard assembly ❷.

2. Installation (See Fig. 3-2.)

1) Align the dowel ❸ attached to the guide guard assembly ❷ with the hole ❹.
2) Secure the guide guard assembly ❷ with the screw ❶.



❶ Screw (P2 × 3)
❷ Guide Guard Assembly
❸ Dowel
❹ Hole

Fig. 3-2.

3-3. DC MOTOR (CAPSTAN MOTOR) ASSEMBLY

1. Removal (See Fig. 3-3.)

1) Set the ULD mode.
2) Turn the stopper ❶ in the direction of the arrow 🅐 as far as it will go.
3) Remove the two screws ❷, then remove the DC motor ❸.

2. Installation (See Fig. 3-3.)

1) Align the two screwed dowels ❹ with the two holes ❺, then engage the toothed part ❻ with the connecting gear ❼.
2) Secure the DC motor assembly ❸ with the two screws ❷.
3) Turn the stopper ❶ in the direction of the arrow 🅑 as far as it will go.

Note:
- When engaging the gears, take care not to damage their teeth.
- Do not leave any clearance between the DC motor ❸ and the chassis.
- Do not touch the capstan motor axle*, the oil seal* and the rotor*.

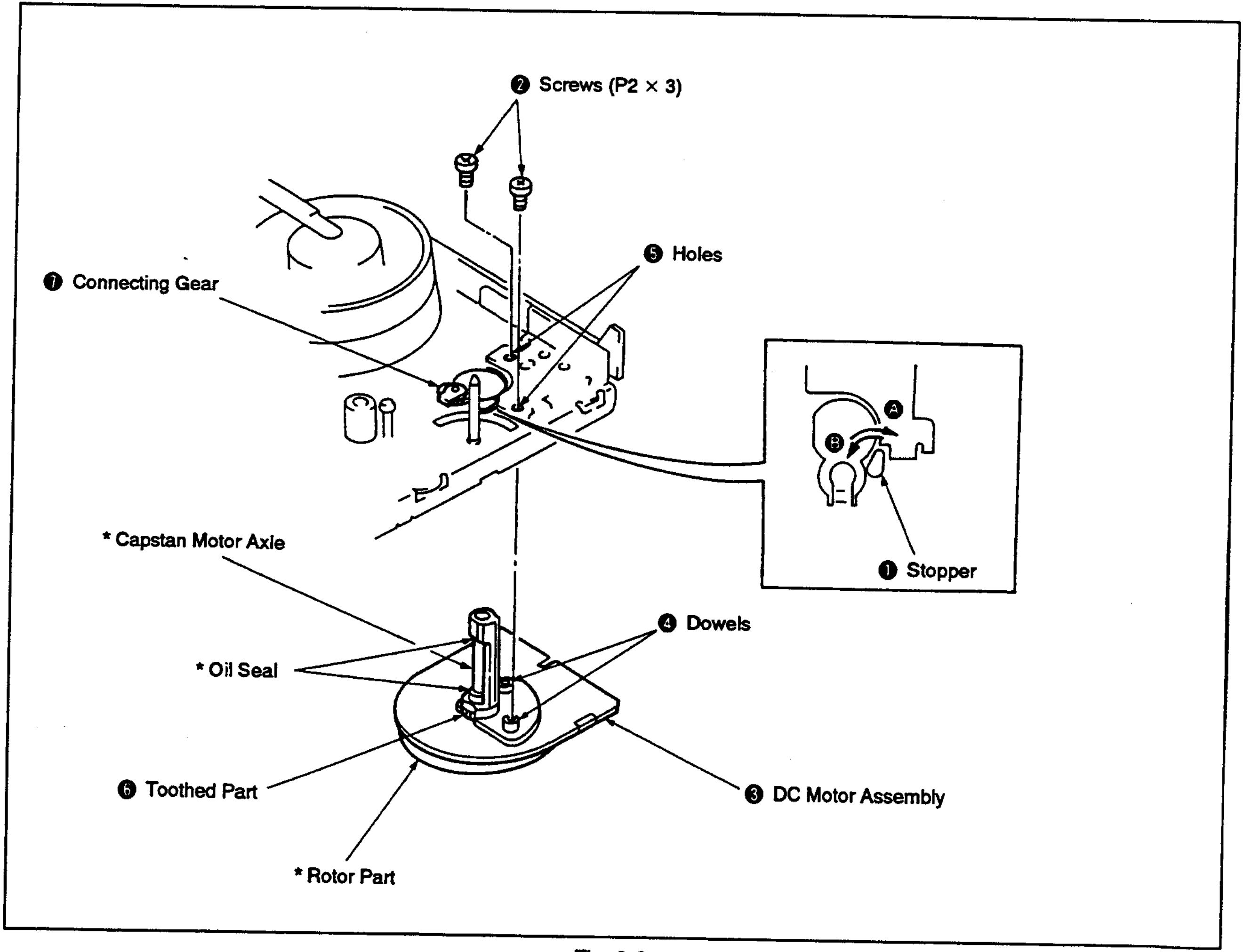

❷ Screws (P2 × 3)
❺ Holes
❼ Connecting Gear
🅐
🅑
❶ Stopper
* Capstan Motor Axle
❹ Dowels
* Oil Seal
❻ Toothed Part
❸ DC Motor Assembly
* Rotor Part

Fig. 3-3.

3-4. S BRAKE, T BRAKE

1. Removal (See Fig. 3-4.)

1) Remove the torsion coil spring (ST) ❶.
2) Remove the axle holding pin ❷, then remove the T brake ❸.
3) Remove the axle holding pin ❹, then remove the S brake ❺.

2. Installation (See Fig. 3-4.)

1) While fitting the toothed part ❻ into the notch ❼, mount the S brake ❺.
2) Insert the axle holding pin ❹.
3) Insert the axle ❽ to the S reel side of the brake release arm ❾ so that the Ⓐ part comes closer to the drum than part Ⓑ, and mount the T brake ❸.
4) Insert the axle holding pin ❷.
5) Insert the torsion coil spring (ST) ❶ below the claw ⓫ of the axle ❿, then hook it to two claws ⓬.

Note: Confirm that the claws of axle holding pins ❷ and ❹ are not broken before assembling.

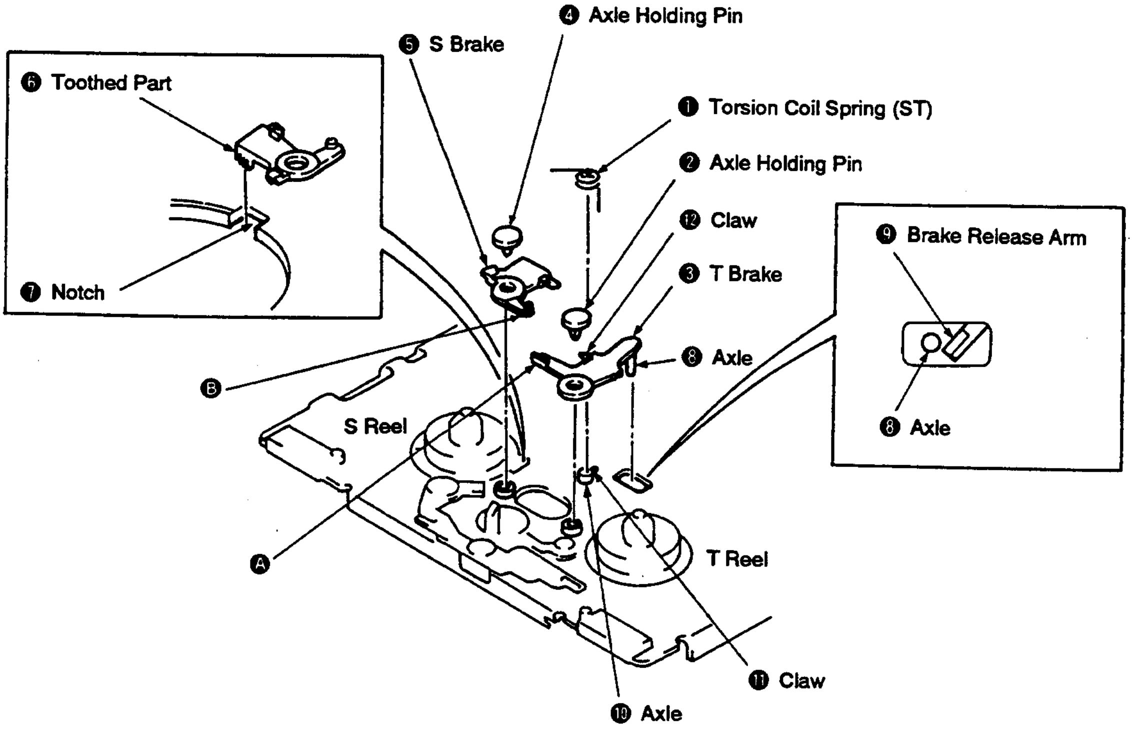

❹ Axle Holding Pin
❺ S Brake
❻ Toothed Part
❼ Notch
❶ Torsion Coil Spring (ST)
❷ Axle Holding Pin
⓬ Claw
❸ T Brake
❽ Axle
❾ Brake Release Arm
❽ Axle
Ⓑ
S Reel
Ⓐ
T Reel
⓫ Claw
❿ Axle

Fig. 3-4.

3-5. LB BRAKE, AXLE HOLDING PINS

1. Removal (See Fig. 3-5.)

1) Remove the screw ❶, then remove the TL holding plate ❷.
2) Remove the axle holding pin ❸, then remove the LB brake ❹.
3) Remove the axle holding pin ❺, then remove the LB lever ❻.

2. Installation (See Fig. 3-5.)

1) Mount the LB lever ❻ matching it to pin ❼ of the LB gear, then secure it with the axle holding pin ❺.
2) Insert the pin ❽ into the notch ❾ of the LB lever ❻, then mount the LB brake ❹ while inserting the toothed part ❿ into the notch ⓫.
3) Insert the axle holding pin ❸.
4) Align the dowel ⓬ with the hole ⓭, then mount the TL holding plate and secure it with the screw ❶.

Note: Confirm that the claws of axle holding pins ❸ and ❺ are not broken before assembling.

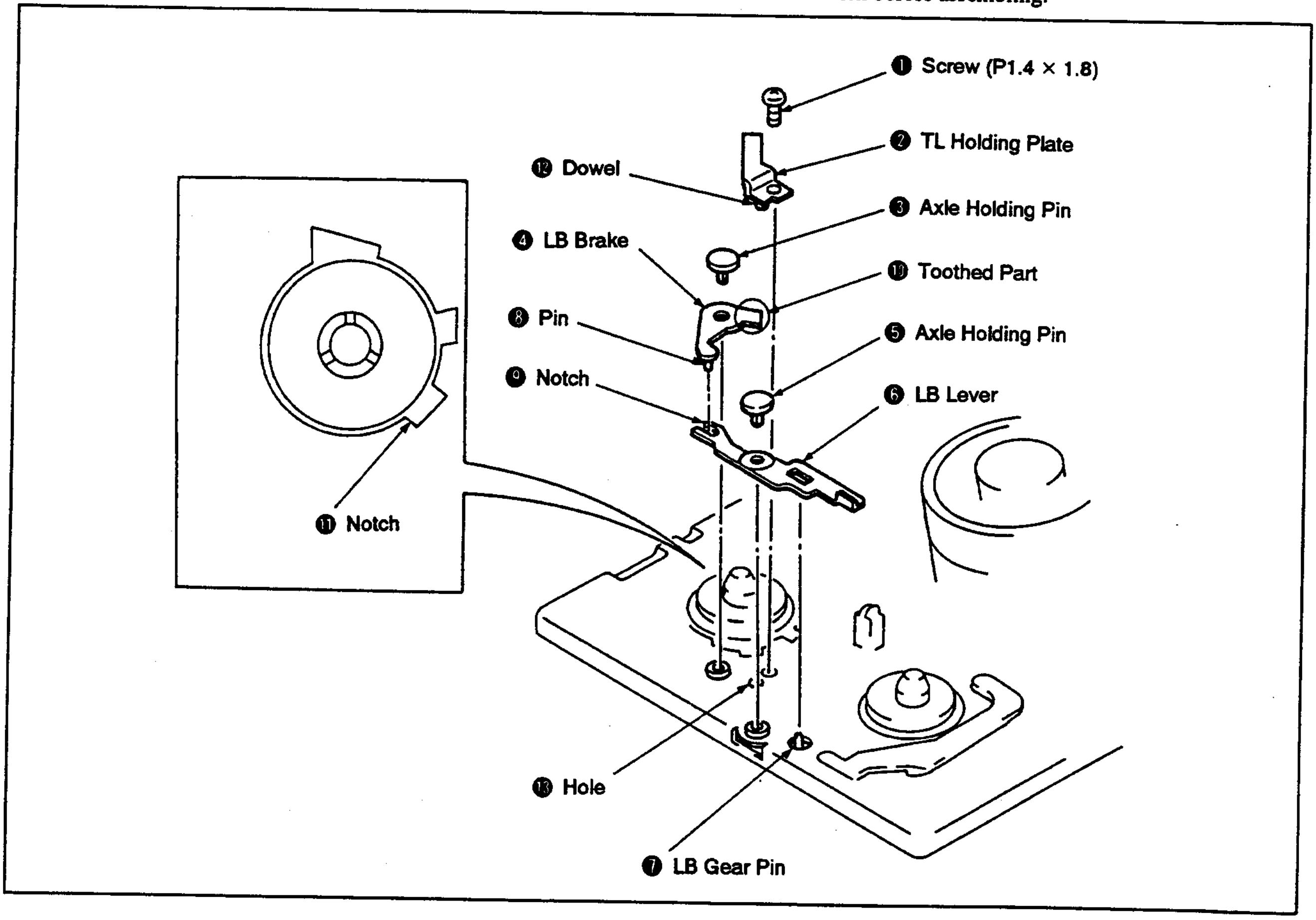

❶ Screw (P1.4 × 1.8)
❷ TL Holding Plate
⓬ Dowel
❸ Axle Holding Pin
❹ LB Brake
❿ Toothed Part
❽ Pin
❺ Axle Holding Pin
❾ Notch
❻ LB Lever
⓫ Notch
⓭ Hole
❼ LB Gear Pin

Fig. 3-5.

3-6. LB RELEASE ARM

1. Removal (See Fig. 3-6.)

1) While pushing the claw ❶ in the direction of the arrow, remove the LB release arm ❷.

2. Installation (See Fig. 3-6.)

1) Fit the LB release arm ❷ to the axle ❸, insert protrusions ⓐ, ⓑ, ⓒ, ⓓ into the three holes ❹, then secure with the claw ❶.

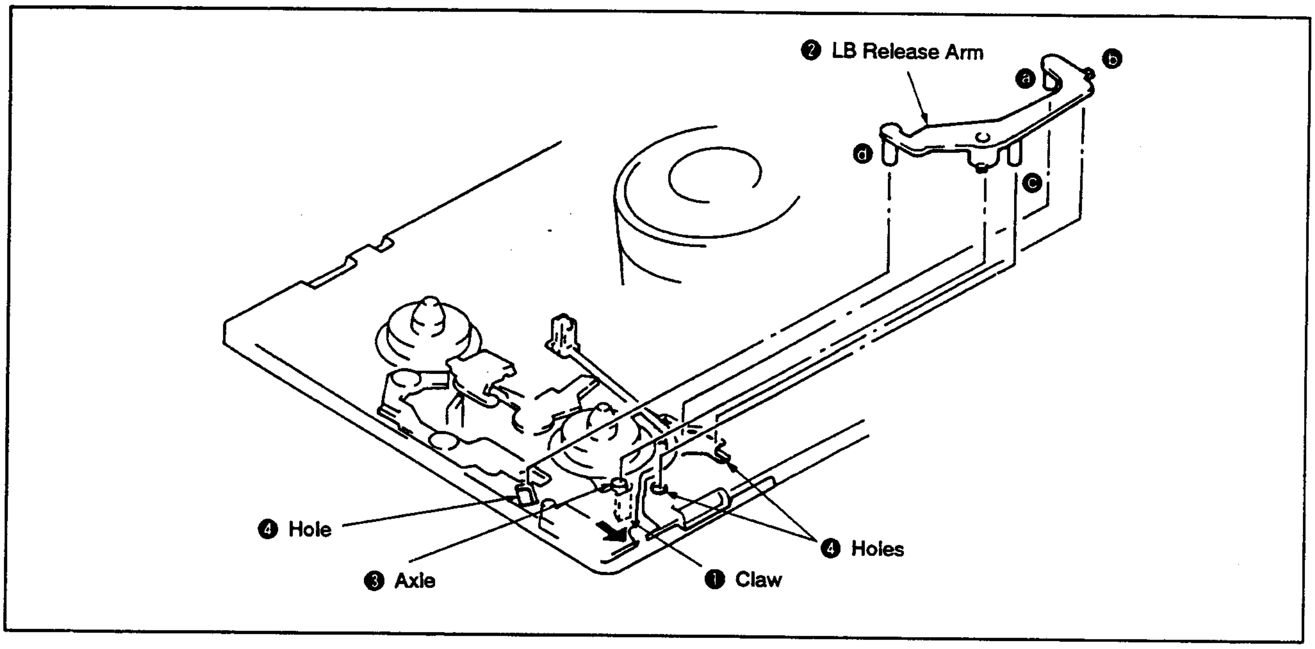

❷ LB Release Arm
ⓐ
ⓑ
ⓒ
ⓓ
❹ Hole
❸ Axle
❶ Claw
❹ Holes

Fig. 3-6.

3-7. RK STOPPER, RK STOPPER ARMS

1. Removal (See Fig, 3-7.)

1) Remove the torsion coil spring (RK) ❶.
2) Open the chassis claw ❷, then remove the RK stopper arm ❸.
3) Remove the RK stopper ❹.

2. Installation (See Fig. 3-7.)

1) Mount the RK stopper ❹ onto the axle ❺.
2) Mount the RK stopper arm ❸ onto the axle ❻, insert Pin ❿ into hole ⓫, then hook the claw ❷ of the chassis to the hole ❼.
3) Insert the torsion coil spring (RK) ❶ into the axle ❺, then hook it to claws ❽ and ❾.

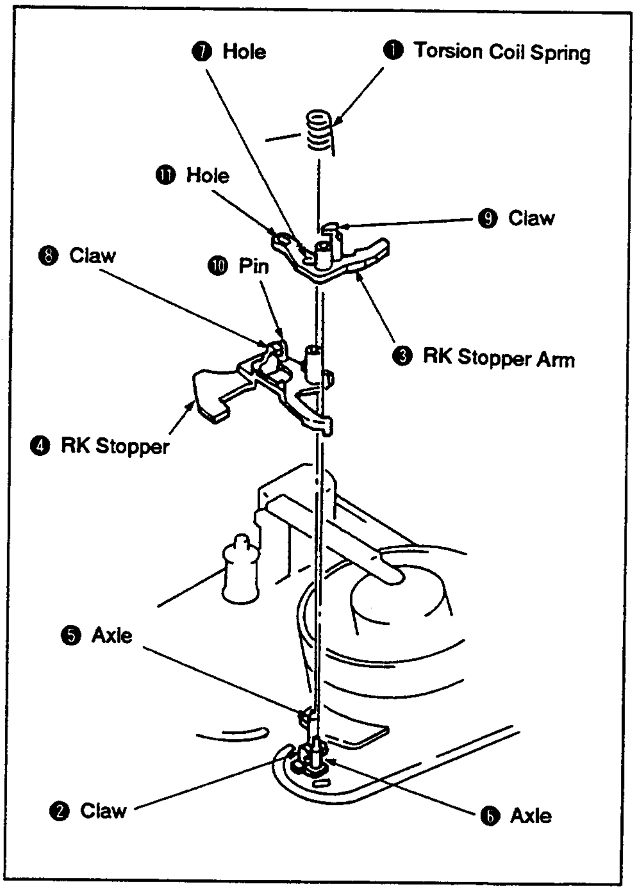

❼ Hole
❶ Torsion Coil Spring
⓫ Hole
❾ Claw
❽ Claw
❿ Pin
❸ RK Stopper Arm
❹ RK Stopper
❺ Axle
❷ Claw
❻ Axle

Fig. 3-7.

3-8. PINCH ARM ASSEMBLY, TG-7 ASSEMBLY

1. Removal (See Fig. 3-8.)

1) Set the $\boxed{\text{IB}}$ mode.
2) Remove the stopper washer ①, then remove the pinch arm assembly ②.
3) Bend the claw ④ inside hole ③ in the direction of the arrow using a thin screwdriver or the like, then remove the TG-7 plate spring ⑤.
4) Remove the TG-7 arm assembly ⑥.

2. Installation (See Fig. 3-8.)

1) Grease the inner surfaces of hole ⑦ (See Fig. A).
2) Insert the axle ⑧ of the TG-7 arm assembly ⑥ into the hole ⑦.
3) Grease the shaded section ⓐ (See Fig. A).
4) Insert the TG-7 plate spring ⑤ into the hole ③, then secure it with the claw ④.
5) Apply half a drop of oil to the axle ⑨ (See Fig. B).
6) Fit the pinch arm assembly ② to the axle ⑨ and insert the pinch roller sub arm assembly tab ⑩ into the ⓑ part.
7) Install the stopper washer ①.

Note:
- Take care not to grease the screw ⑪ of the TG-7 arm assembly ⑥ (See Fig. A).
- When fitting the pinch arm assembly ② to the axle ⑨, make sure that it does not touch the TG-7 guide ⑫ or the rubber roller ⑬.
- After assembling, be sure to perform tape path adjustment as described in section 4.

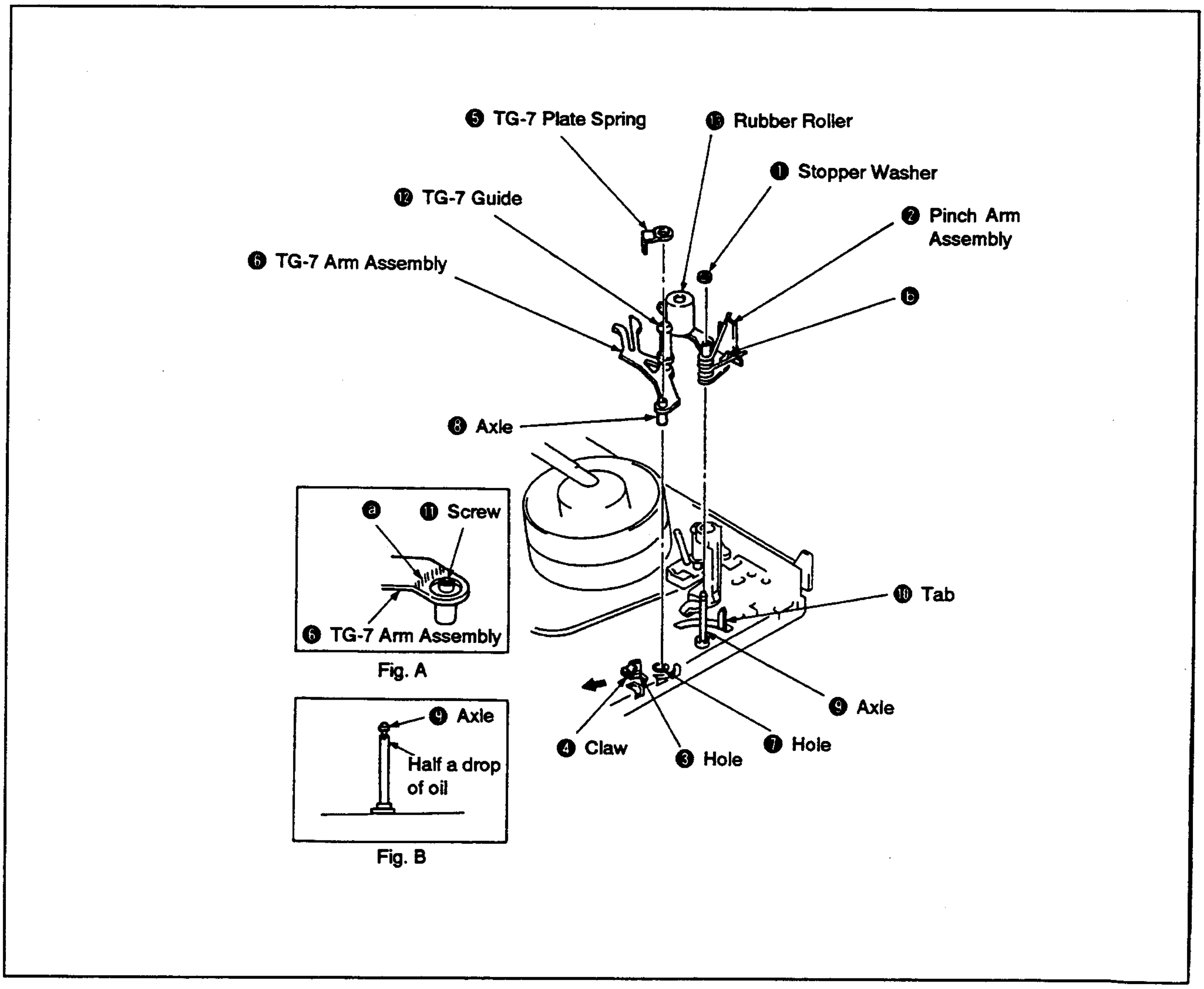

⑤ TG-7 Plate Spring
⑬ Rubber Roller
① Stopper Washer
⑫ TG-7 Guide
② Pinch Arm Assembly
⑥ TG-7 Arm Assembly
ⓑ
⑧ Axle
ⓐ
⑪ Screw
⑥ TG-7 Arm Assembly
Fig. A
⑩ Tab
⑨ Axle
Half a drop of oil
Fig. B
⑨ Axle
④ Claw
③ Hole
⑦ Hole

Fig. 3-8.

3-9. TG-2 ASSEMBLY

1. Removal (See Fig. 3-9.)

1) Remove the TG-2 upper flange assembly ❶.
2) Remove the TG-2 roller ❷, the TG-2 sleeve ❸, the TG-2 lower flange ❹ and the compression spring ❺.

2. Installation (See Fig. 3-9.)

1) Mount the compression spring ❺, the TG-2 lower flange ❹, the TG-2 sleeve ❸ and the TG-2 roller ❷ to the axle.
2) Secure the TG-2 upper flange ❶ to the axle by rotating it 4 to 6 turns.

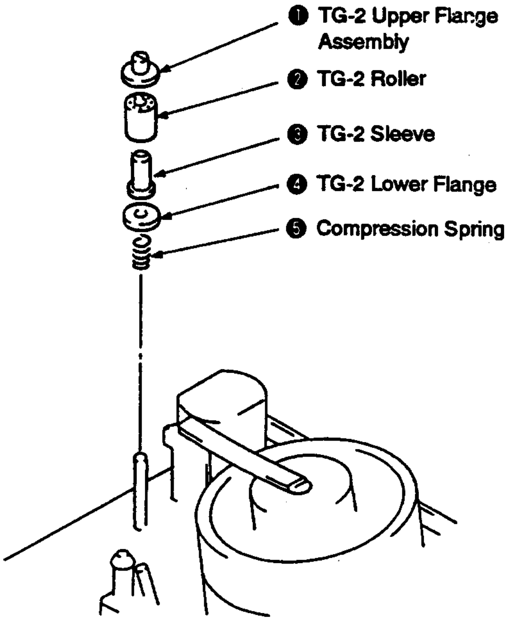

❶ TG-2 Upper Flange Assembly
❷ TG-2 Roller
❸ TG-2 Sleeve
❹ TG-2 Lower Flange
❺ Compression Spring

Fig. 3-9.

3. TG-2 Height Preset (see Fig. 3-10.)

1) Adjust height from the mechanism chassis upper surface to the TG-2 upper flange ❶ upper surface to 18.6 mm by turning the TG-2 upper flange ❶.

Note: After adjustment, be sure to perform tape path adjustment as described in section 4.

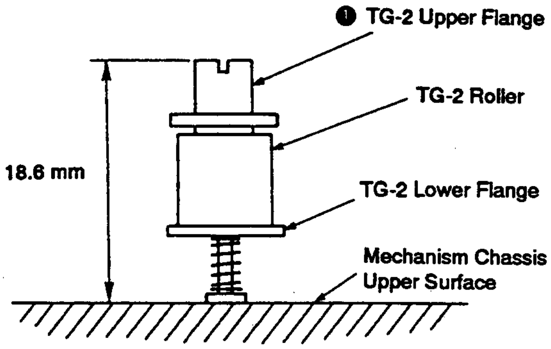

❶ TG-2 Upper Flange
TG-2 Roller
18.6 mm
TG-2 Lower Flange
Mechanism Chassis Upper Surface

Fig. 3-10.

3-10. S REEL TABLE ASSEMBLY, T REEL TABLE ASSEMBLY

1. Removal (See Fig. 3-11.)

1) Remove the S brake and T brake as described in section 3-4.
2) Remove the TL holding plate as described in section 3-5.
3) Remove the tension regulator band assembly as described in section 3-11.
4) Remove the S reel table assembly ①.
5) Turn the stopper ② approx. 90 ° in the direction of the arrow Ⓐ.
6) While sliding the LB release arm ③ in the direction of the arrow Ⓑ, remove the T reel table assembly ④.

2. Installation (See Fig. 3-11.)

1) Apply half a drop of oil to the axle ⑤ (See Fig. A).
2) Move the RK gear ⑥ in the direction of the arrow Ⓒ and the TS brake ⑦ in the direction of the arrow Ⓓ, putting them out of the way.
3) While sliding the LB release arm ③ in the direction of the arrow Ⓑ, mount the T reel table assembly ④ onto the axle ⑤, then turn the stopper ② in the direction of the arrow Ⓔ as far as it will go.
4) Apply half a drop of oil to the axle ⑧ (See Fig. B).
5) Move the RK gear ⑥ in the direction of the arrow Ⓕ, the UL brake ⑨ in the direction of the arrow Ⓖ and the LB brake ⑩ in the direction of the arrow Ⓗ, putting them out of the way.
6) Mount the S reel table ① onto the axle ⑧.
7) Mount the tension regulator band assembly as described in section 3-11.
8) Mount the TL holding plate as described in section 3-5.
9) Mount the S brake and T brake assemblies as described in section 3-4.

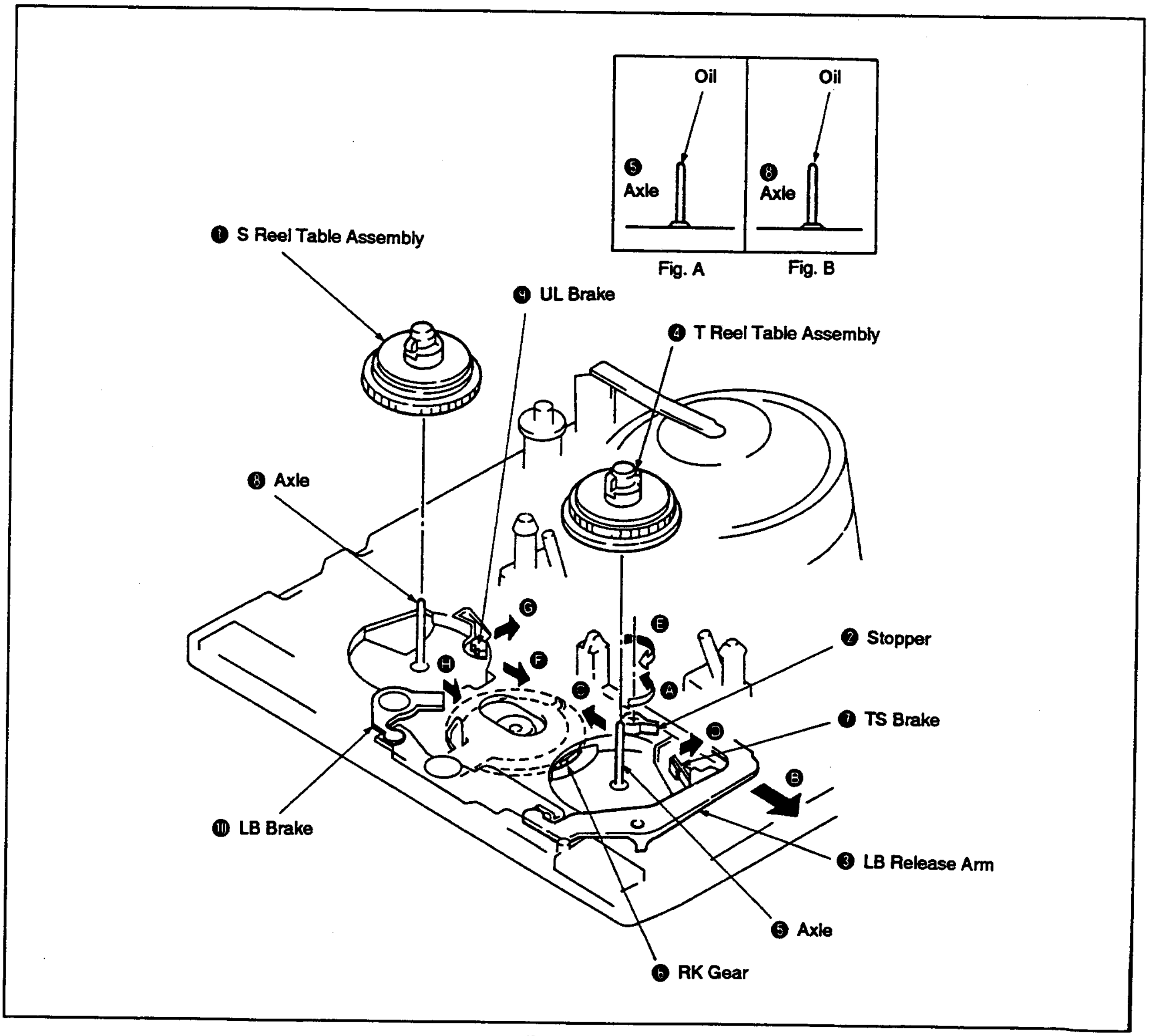

Oil
Oil
⑤ Axle
⑧ Axle
Fig. A
Fig. B
① S Reel Table Assembly
⑨ UL Brake
④ T Reel Table Assembly
⑧ Axle
Ⓖ
Ⓗ
Ⓕ
Ⓒ
Ⓔ
Ⓐ
② Stopper
⑦ TS Brake
Ⓓ
Ⓑ
⑩ LB Brake
③ LB Release Arm
⑤ Axle
⑥ RK Gear

Fig. 3-11.

3-11. TENSION REGULATOR BAND ASSEMBLY, TENSION REGULATOR ARM ASSEMBLY

1. Removal (See Fig. 3-12.)

1) Remove the TL holding plate as described in section 3-5.
2) Remove the screw ❶.
3) Using a thin screwdriver or the like, remove the tension regulator band assembly ❹ from the axle ❸ of tension regulator arm assembly ❷.
4) Remove the tension spring ❺.
5) Remove the stopper washer ❻ from the back of the mechanism chassis, then remove the tension regulator arm assembly ❷.
6) Open the claw ❼, then remove the adjust arm ❽.

Note: When removing the tension regulator band assembly ❹, take care not to twist or bend it, and not to touch the felt surface ❾.

2. Installation (See Fig. 3-12.)

1) Engage the adjust arm ❽ in the position shown in Fig. A, then close the claw ❼.
2) Apply half a drop of oil to the hole ❿.
3) Mount the tension regulator arm assembly ❷, then insert it into the slot ⓫ so that the ⓐ part comes to the arrow 🅐 side of the switch lever assembly (See Fig. B).
4) While holding the tension regulator arm assembly ❷ from the mechanism chassis front, secure it with the stopper washer ❻ from the back.
5) Hook the R hook of the tension spring ❻ to the adjust arm ❽ as shown in the figure, then hook the opposite end to the tension regulator arm assembly ❷.
6) Mount the tension regulator band assembly ❹ onto the axle ❸ of tension regulator arm assembly ❷, and place it so that the felt surface ❾ comes against the shaded portion of the S reel table assembly ⓬.
7) Mount the tension regulator plate ⓭ of the tension regulator band assembly ❹ so that it is aligned with the dowel ⓮ of the mechanism chassis, then secure it temporarily with the screw ❶.
8) Mount the TL holding plate as described in section 3-5.
9) Adjust tension regulator FWD position as described in section 3-12.
10) Perform adjust arm adjustment as described in section 3-22.

Note: When mounting the tension regulator band assembly ❷, take care not to twist or bend it, and not to touch the felt surface ❾.

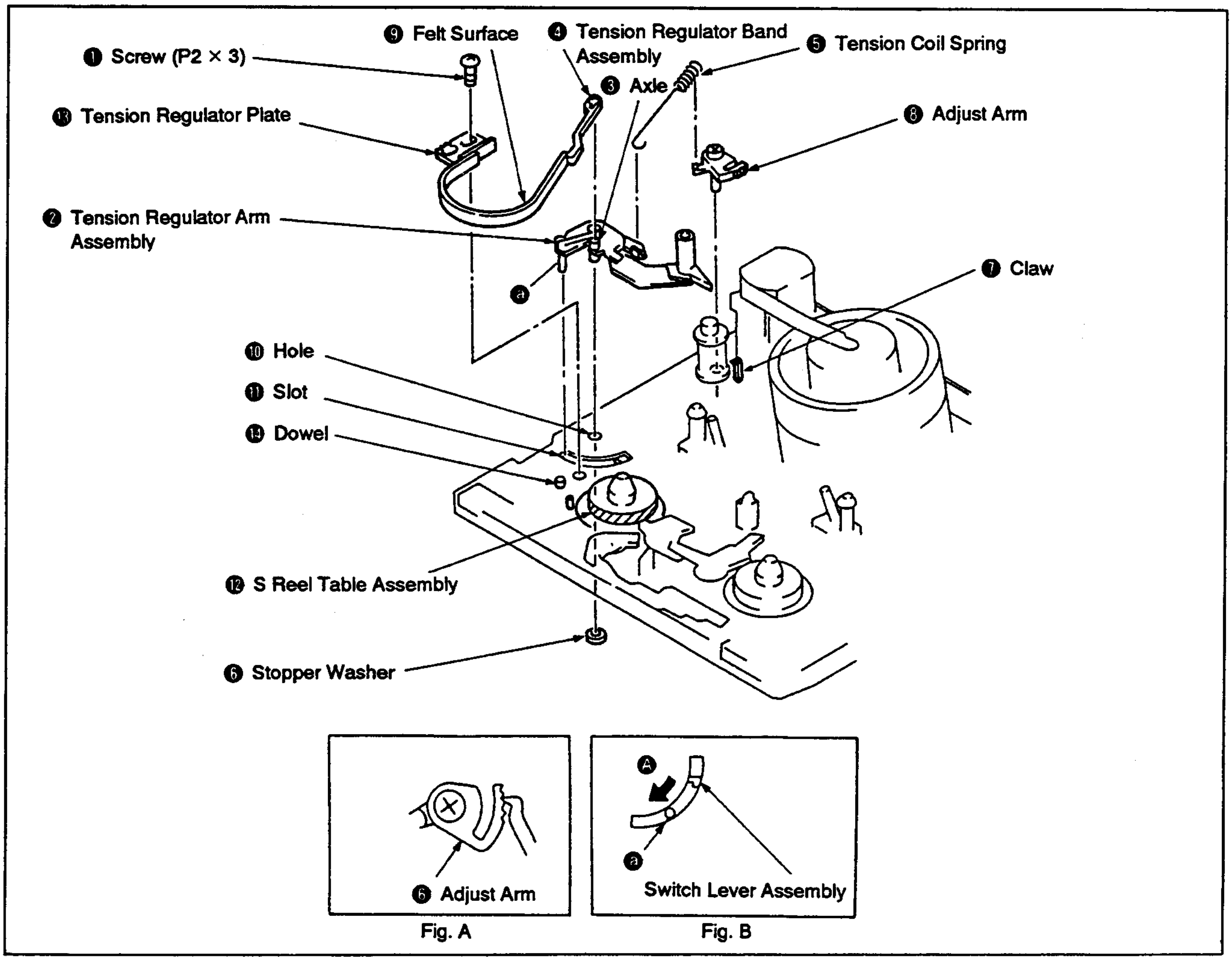

❶ Screw (P2 × 3)
❾ Felt Surface
❹ Tension Regulator Band Assembly
❸ Axle
❺ Tension Coil Spring
⓭ Tension Regulator Plate
❽ Adjust Arm
❷ Tension Regulator Arm Assembly
❼ Claw
ⓐ
❿ Hole
⓫ Slot
⓮ Dowel
⓬ S Reel Table Assembly
❻ Stopper Washer
❻ Adjust Arm
🅐
ⓐ
Switch Lever Assembly

Fig. A

Fig. B

Fig. 3-12.

3-12. TENSION REGULATOR FWD POSITION PRESET (See Fig. 3-13.)

1) Load a cassette tape and set the FWD mode.
2) Confirm whether the distance between ⓐ part of the tension regulator arm ❶ and the groove ❷ of the chassis is 1.1 ± 0.3 mm. If this distance is not within the specified range, remove the cassette tape and perform the following adjustment.
3) Loosen the fixing screw ❹ of the tension regulator band assembly ❸.
4) Slide the tension regulator plate ❺ in the direction of the arrow Ⓐ if the measured distance is over the specified range, and in the direction of the arrow Ⓑ if it is under that range. Then, fix it with the screw ❹.
5) Repeat steps 1) and 2) and confirm that the distance is within the specified range.

Note: Use a cassette with the tape advanced halfway.

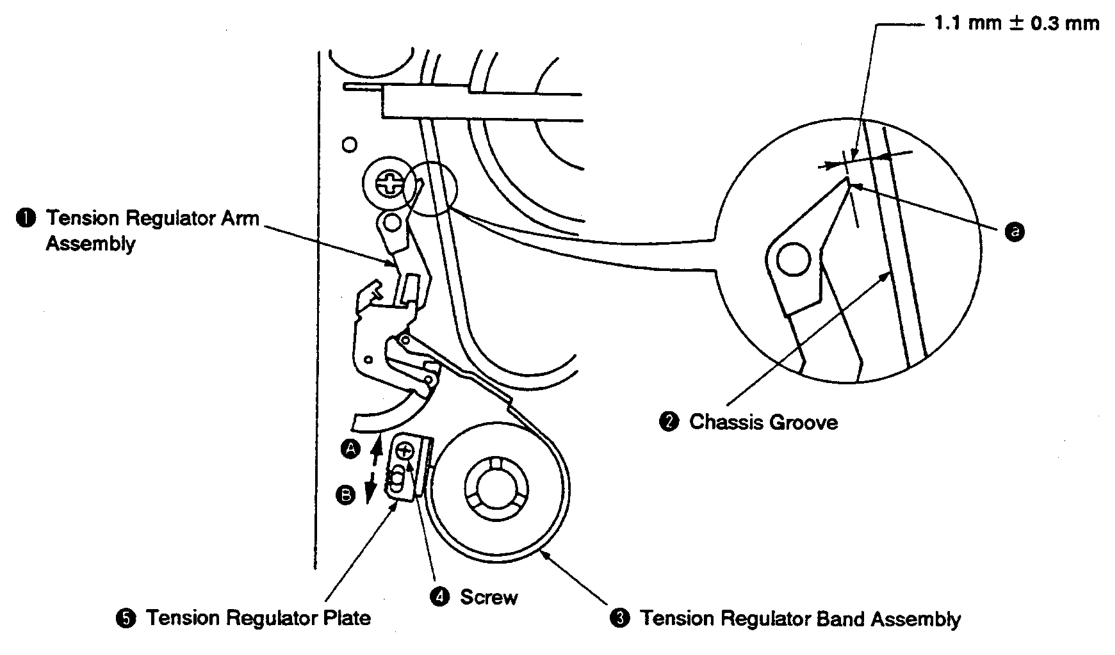

1.1 mm ± 0.3 mm
❶ Tension Regulator Arm Assembly
ⓐ
❷ Chassis Groove
Ⓐ
Ⓑ
❹ Screw
❺ Tension Regulator Plate
❸ Tension Regulator Band Assembly

Fig. 3-13.

3-13. DRUM ASSEMBLY, DEW SENSOR

1. Removal (See Fig. 3-14.)

1) Set the EJECT mode.
2) Remove the flexible board ❶ and the two connectors ❷.
3) Remove the guide guard assembly as described in section 3-2.
4) Remove the screw ❸, then remove the axle ground terminal ❹.
5) Remove the three screws ❺, then remove the drum assembly ❻ from the mechanism chassis.
6) Remove the connector ❿
7) Remove the screw ❼, then remove the dew sensor ❽.

Note:
- When removing the drum assembly ❻ from the mechanism chassis, take care not to cut the flexible board ❶ or the harness.
- Take care not to touch the head tip ❾.

2. Installation (See Fig. 3-14.)

1) Insert part ⓐ of the dew sensor ❽ into the notch ⓫ of the mechanism chassis, then secure it with the screw ❼.
2) Mount the connector ❿.
3) Clamp the harness ⓯ of the dew sensor ❽ with the reinforcing the claw ⓰ of the plate SS assembly (See Fig. A).
4) Insert the connector ❷ and the flexible board ❶ into the hole ⓬ of the mechanism chassis, align the drum assembly ❻ with the two dowels ⓭ and secure it with the three screws ❺.
5) Align the axle ground terminal ❷ with the two dowels ⓮ of the mechanism chassis and secure it with the screw ❸.
6) Mount the guide guard assembly as described in section 3-2.
7) Mount the two connectors ❷ and the flexible board ❶.

Note:
- Take care not to cut the flexible board ❶ or the harness ⓯.
- Take care not to touch the head tip ❾.
- After assembling, be sure to perform Tape Path Adjustment following instructions in section 4.

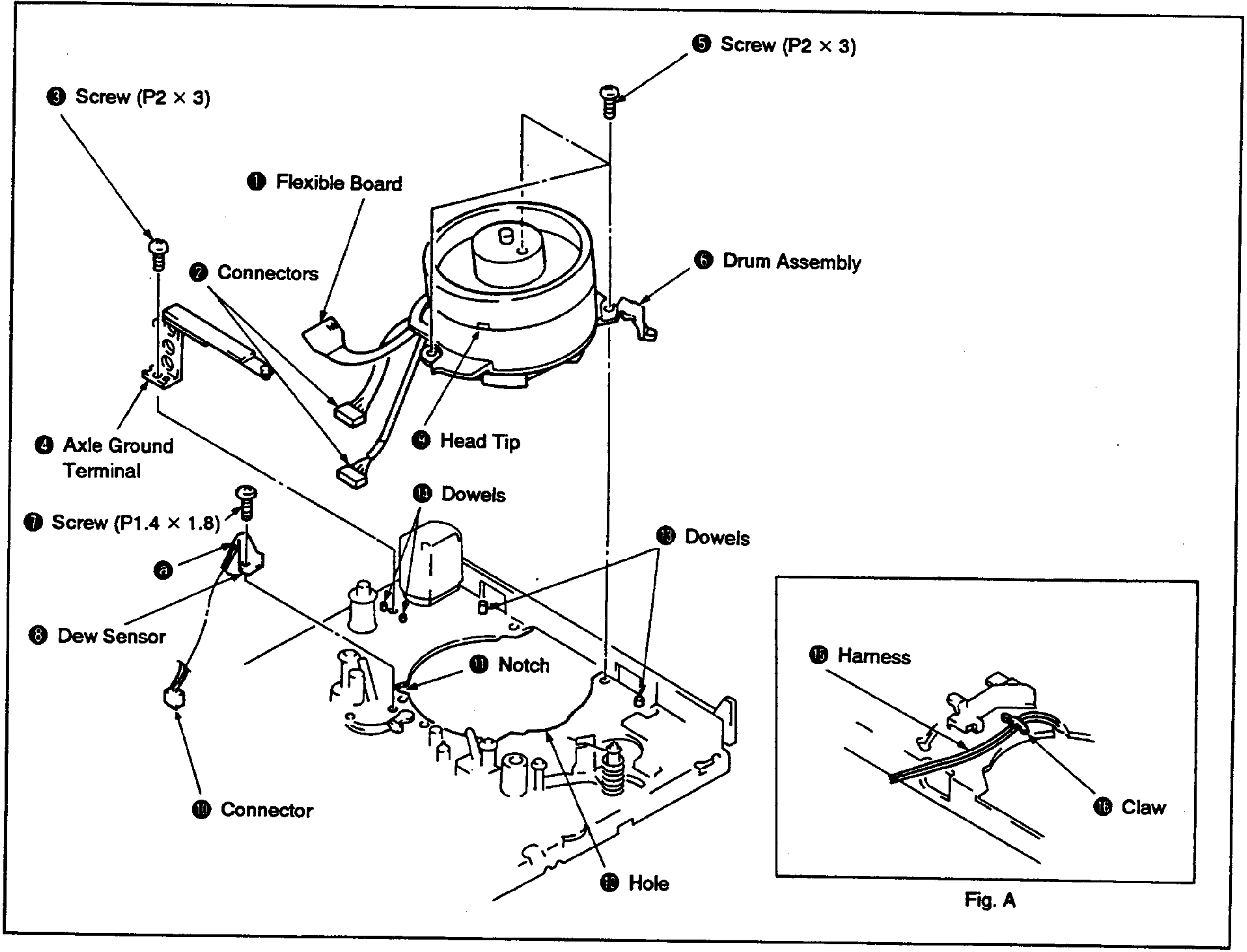

❺ Screw (P2 × 3)
❸ Screw (P2 × 3)
❶ Flexible Board
❷ Connectors
❻ Drum Assembly
❹ Axle Ground Terminal
❾ Head Tip
⓮ Dowels
❼ Screw (P1.4 × 1.8)
⓭ Dowels
ⓐ
❽ Dew Sensor
⓫ Notch
❿ Connector
⓬ Hole
⓯ Harness
⓰ Claw
Fig. A

Fig. 3-14.

3-14. EJECT LEVER, SWITCH LEVER ASSEMBLY, PINCH ROLLER SUB ARM ASSEMBLY

1. Removal (See Fig. 3-15.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Set the [STOP] mode.
3) Remove the claw ❶, then remove the eject lever ❷.
4) Remove the stopper washer ❸, then remove the switch lever assembly ❹.
5) Remove the pinch roller load spring ❺.
6) Remove the stopper washer ❻, then remove the pinch roller sub arm assembly ❼.

2. Installation (See Fig. 3-15.)

1) Grease the axle ❽ (See Fig. A).
2) Assemble by inserting ⓐ part of the pinch roller sub arm assembly ❼ into the slot ❾, then insert the pin ❿ into the loading lever assembly notch ⓫.
3) Secure with the stopper washer ❻.
4) Mount the pinch roller load spring ❺ by catching its ⓑ end between the claw ⓬ and the chassis side and its ⓒ end to the claw ⓬.
5) Apply half a drop of oil to the axle ⓭ (See Fig. B).
6) Align the groove ⓮ of the switch lever assembly ❹ with the mode detector switch protrusion ⓯, mount it on the axle ⓭, then insert the pin ⓰ into the drive gear (left) assembly ⓱ outer groove.
7) Secure with the stopper washer ❸.
8) Mount the eject lever ❷ and close the claw ❶.
9) Mount the DC motor (capstan motor) as described in section 3-3.

Note: When mounting the switch lever assembly ❹ onto the axle ⓭ with the tension regulator arm assembly installed, set the pin ⓰ to the arrow Ⓐ side of the switch lever assembly ❹.

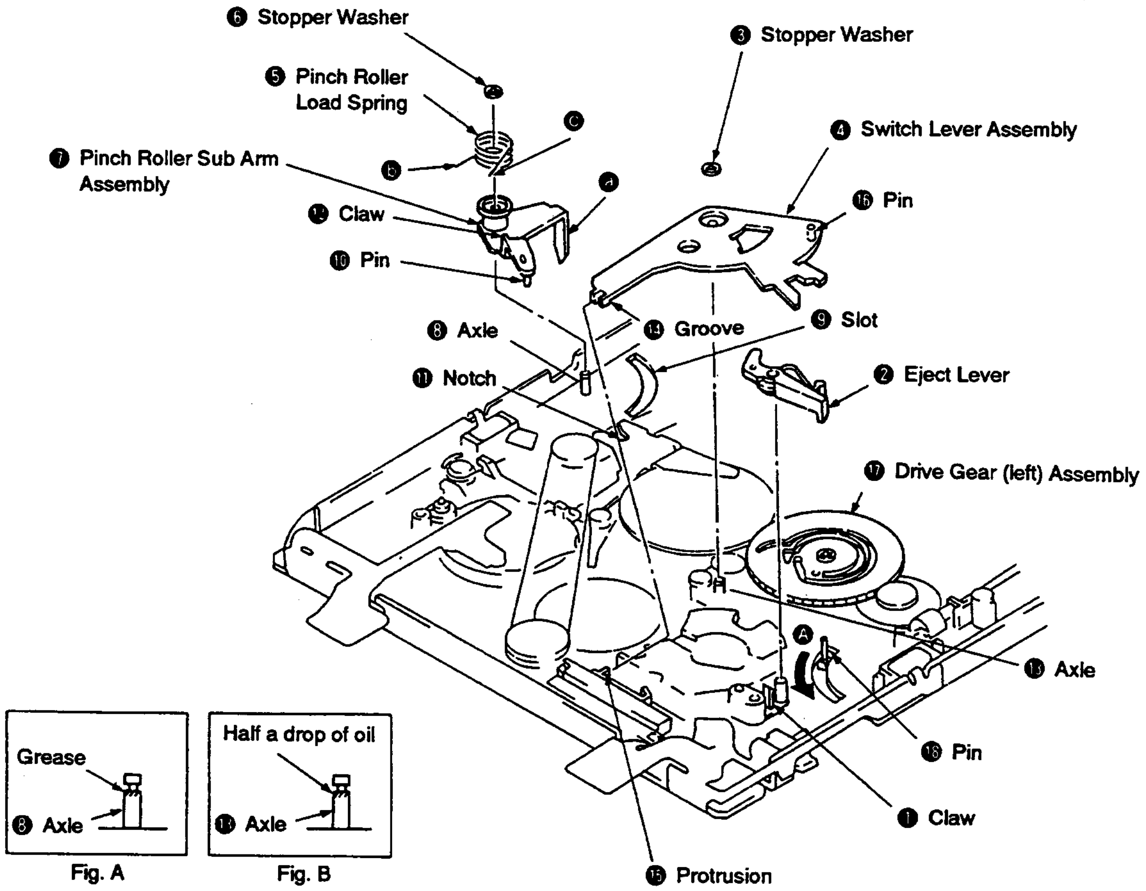

❻ Stopper Washer
❺ Pinch Roller Load Spring
ⓒ
❼ Pinch Roller Sub Arm Assembly
ⓑ
ⓐ
⓬ Claw
❿ Pin
❽ Axle
⓫ Notch
❸ Stopper Washer
❹ Switch Lever Assembly
⓰ Pin
⓮ Groove
❾ Slot
❷ Eject Lever
⓱ Drive Gear (left) Assembly
Ⓐ
⓭ Axle
⓰ Pin
❶ Claw
⓯ Protrusion
Grease
❽ Axle
Half a drop of oil
⓭ Axle

Fig. A

Fig. B

Fig. 3-15.

3-15. TIMING BELT (L) , RC GEAR ASSEMBLY, LOADING LEVER ASSEMBLY, TIMING BELT (S), CONNECTING GEAR ASSEMBLY

1. Removal (See Fig. 3-16.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the pinch roller sub arm assembly as described in section 3-14.
3) Set the STOP mode.
4) Remove the stopper washer ❶ , then remove the RC gear assembly ❷ from the axle ❹ with the timing belt (L) ❸ attached.
5) Remove the timing belt (L) ❸ from the idler pulley assembly ❺.
6) Remove the stopper washer ❻ and remove the loading lever assembly ❽ while pushing the claw ❼ in the direction of the arrow Ⓐ.
7) Turn the stopper ❾ approx. 90 ° in the direction of the arrow Ⓑ.
8) Remove the connecting gear assembly ⓫ from the axle ⓰ with the timing belt (S) ❿ attached.
9) Remove the timing belt (S) ❿ from the idler pulley assembly ❺.

Note: When removing the connecting gear ⓫ , take care not touch the flange section ⓑ.

2. Installation (See Fig. 3-16.)

1) Apply half a drop of oil to the axle ⓰ (See Fig. F).
2) Hook one end of the timing belt (S) ❿ onto the connecting gear assembly ⓫ and the other end onto gear ⓓ of the idler pulley assembly ❺. (Refer to the figure.)
3) Mount the connecting gear assembly ⓫ with the timing belt (S) ❿ attached to the axle ⓰.
4) Turn the stopper ❾ in the direction of the arrow Ⓒ as far as it will go.
5) Apply half a drop of oil to the axle ⓬ (See Fig. A).
6) Fit the loading lever assembly ❽ to the axle ⓬, secure the ⓐ part with the claw ❼ and place the pin ⓭ into the groove of the drive gear (right) assembly ⓮.
7) Install the stopper washer ❻.
8) Place the timing belt (L) ❸ around the gears of the RC gear assembly ❷ indicated in Fig. B, and its opposite side around the gear ⓒ of the idler pulley assembly ❺. (See Fig. E.)
9) Mount the RC gear assembly ❷ onto the axle ❹ with the timing belt (L) ❸ attached, and engage it with the gear of the RK gear assembly ⓯.
10) Install the stopper washer ❶.
11) Grease parts of the loading lever assembly ❽ indicated in Fig. C.
12) Mount the pinch roller sub arm assembly as described in section 3-14.
13) Mount the DC motor (capstan motor) as described in section 3-3.

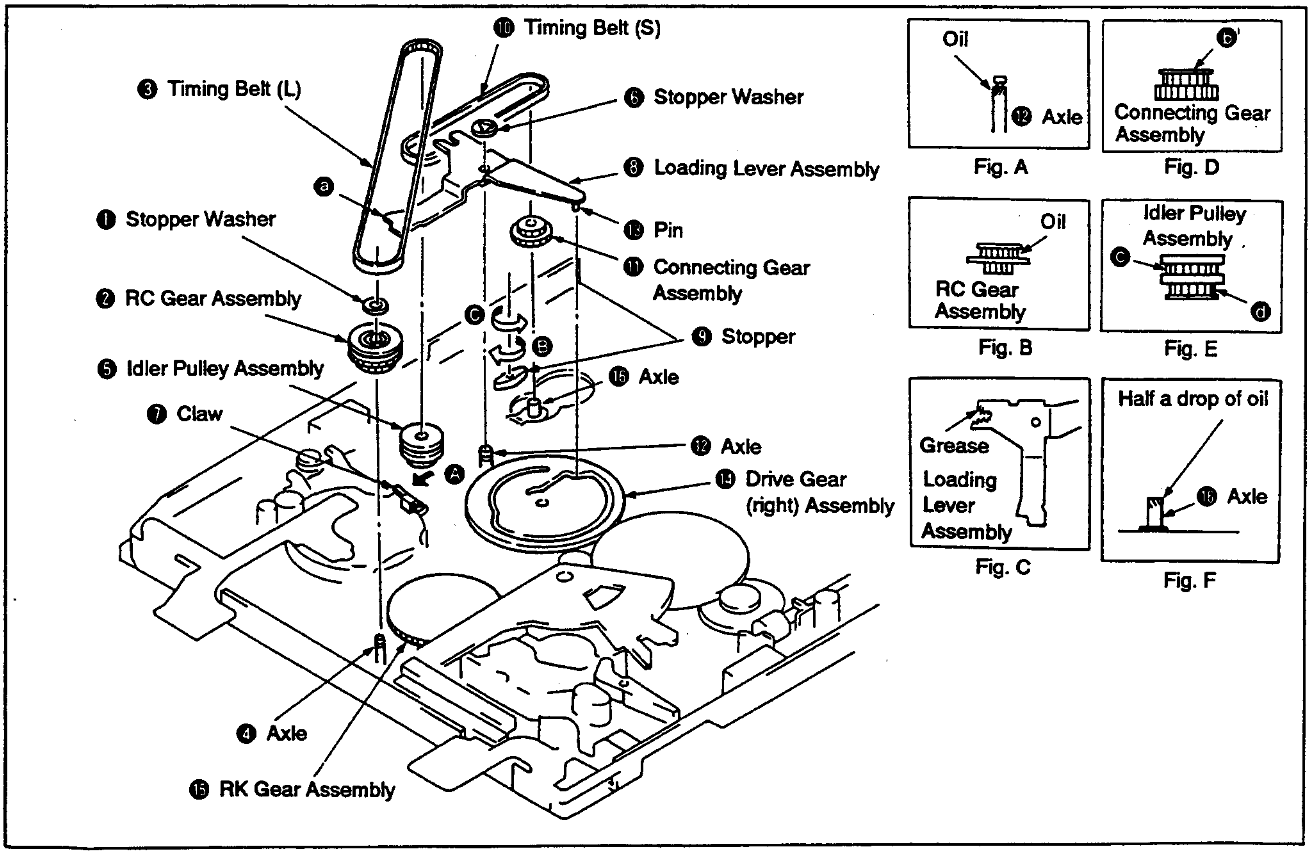

❿ Timing Belt (S)
❸ Timing Belt (L)
❻ Stopper Washer
❽ Loading Lever Assembly
ⓐ
❶ Stopper Washer
⓭ Pin
⓫ Connecting Gear Assembly
❷ RC Gear Assembly
Ⓒ
Ⓑ
❾ Stopper
❺ Idler Pulley Assembly
⓰ Axle
❼ Claw
⓬ Axle
Ⓐ
⓮ Drive Gear (right) Assembly
❹ Axle
⓯ RK Gear Assembly
Oil
⓬ Axle
Fig. A
ⓑ'
Connecting Gear Assembly
Fig. D
Oil
RC Gear Assembly
Fig. B
Idler Pulley Assembly
ⓒ
ⓓ
Fig. E
Grease
Loading Lever Assembly
Fig. C
Half a drop of oil
⓰ Axle
Fig. F

Fig. 3-16.

3-16. IDLER PULLEY, TS BRAKE ASSEMBLY, LB GEAR ASSEMBLY, RK GEAR ASSEMBLY

1. Removal (See Fig. 3-17.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the switch lever assembly as described in section 3-14.
3) Remove the timing belt (L), the RC gear assembly, the loading lever assembly, the timing belt (S) and the connecting gear assembly described in section 3-15.
4) Set the STOP mode.
5) Remove the stopper washer ❶, then remove the idler pulley ❷.
6) Open the claw ❸, then remove the TS brake assembly ❹.
7) Remove the torsion coil spring (LB) ❺.
8) Remove the stopper washer ❻, then remove the LB gear assembly ❼.
9) Remove the RK gear assembly ❽.

Note: When removing the idler pulley ❷, take care not to touch the flange section ⓐ. (See Fig. C.)

2. Installation (See Fig. 3-17.)

1) Apply half a drop of oil to the axle ❾ (See Fig. A).
2) Mount the RK gear assembly ❽ onto the axle ❾, keeping it in horizontal position.
3) Apply half a drop of oil to the axle ❿ (See Fig. B).
4) Mount the LB gear assembly ❼ onto the axle ❿ and secure it with the stopper washer ❻.
5) Insert the torsion coil spring (LB) ❺ into the axle ⓫, then hook it to the mechanism chassis notch ⓬ and to the tab ⓭.
6) Mount the TS brake assembly ❹ and close the claw ❸.
7) Apply half a drop of oil to the axle ⓰ (See Fig. D).
8) Mount the idler pulley ❷ onto the axle ⓰, then secure it with the stopper washer ❶.
9) Mount the timing belt (L) , the RC gear assembly, the loading lever assembly, the timing belt (S) and the connecting gear assembly as described in section 3-15.
10) Mount the switch lever assembly as described in section 3-14.
11) Mount the DC motor (capstan motor) as described in section 3-3.

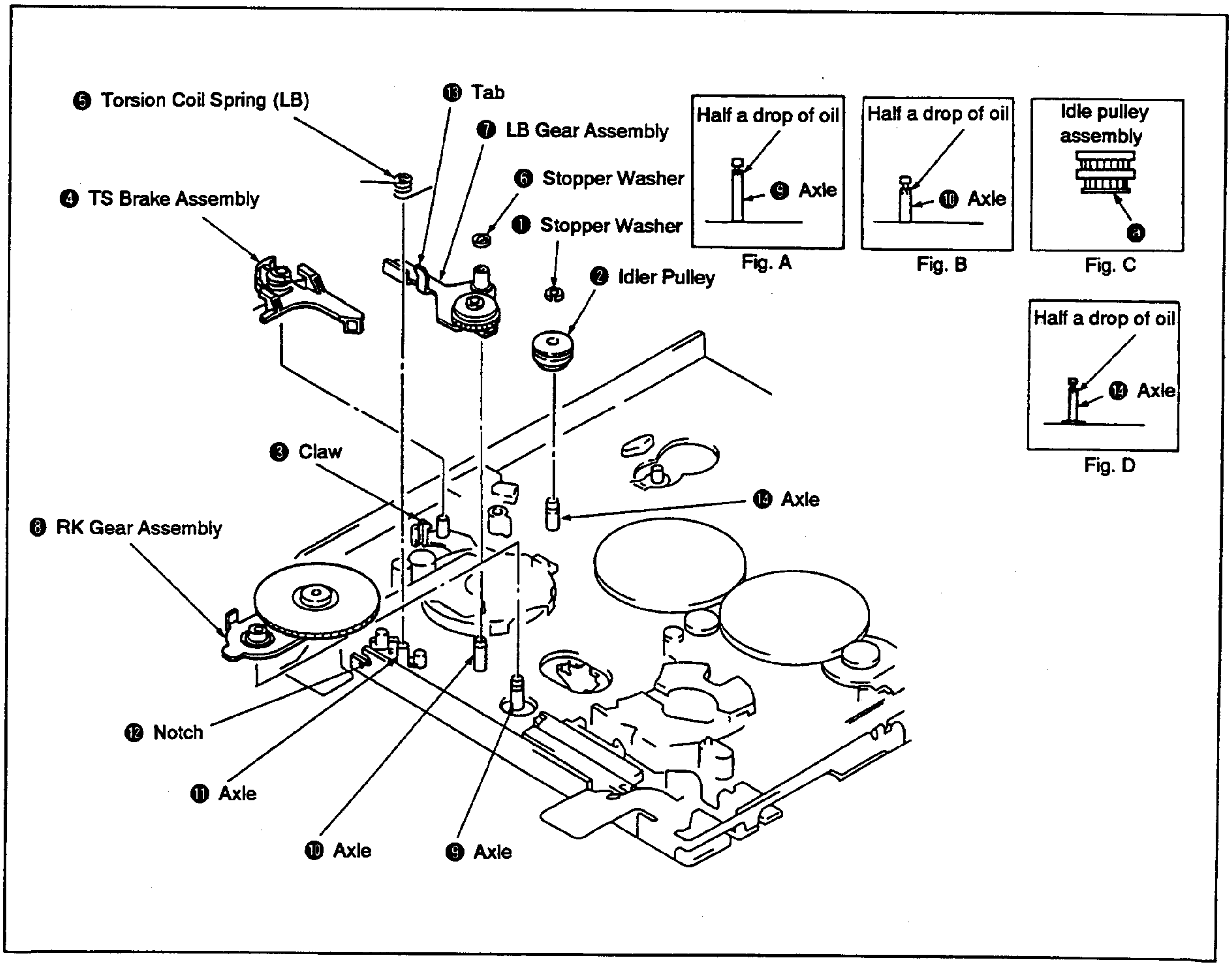

❺ Torsion Coil Spring (LB)
⓭ Tab
❼ LB Gear Assembly
❻ Stopper Washer
❹ TS Brake Assembly
❶ Stopper Washer
❷ Idler Pulley
❸ Claw
⓮ Axle
❽ RK Gear Assembly
⓬ Notch
⓫ Axle
❿ Axle
❾ Axle
Half a drop of oil
❾ Axle
Half a drop of oil
❿ Axle
Idle pulley assembly
ⓐ
Half a drop of oil
⓮ Axle

Fig. A

Fig. B

Fig. C

Fig. D

Fig. 3-17.

3-17. UL GEAR, UL BRAKE, UL ARM, LB PLATE SPRING

1. Removal (See Fig. 3-18.)

1) Remove the switch lever assembly as described in section 3-14.
2) Remove the stopper washer ❶ , then remove the UL gear ❷.
3) Remove the UL arm ❸ , the 1.6 mm-diameter poly washer ❹ and the LB plate spring ❺ .
4) Remove the UL brake ❻ .

2. Installation (See Fig. 3-18.)

1) Mount the UL brake ❻ .
2) Apply half a drop of oil to the axle ❼ (See Fig. A).
3) Mount the LB plate spring ❺ to the axle ❼ as shown in Fig. B, then install the 1.6mm-diameter poly washer ❹ .
4) Mount the UL arm ❸ to the axle ❼ so that the protrusion ❽ comes into the groove ❾ of the UL brake ❻ .
5) Mount the UL gear ❷ to the axle ❼ and engage it with the gear of the drive gear (left) assembly ❿ .
6) Install the stopper washer ❶ .
7) Mount the switch lever assembly as described in section 3-14.

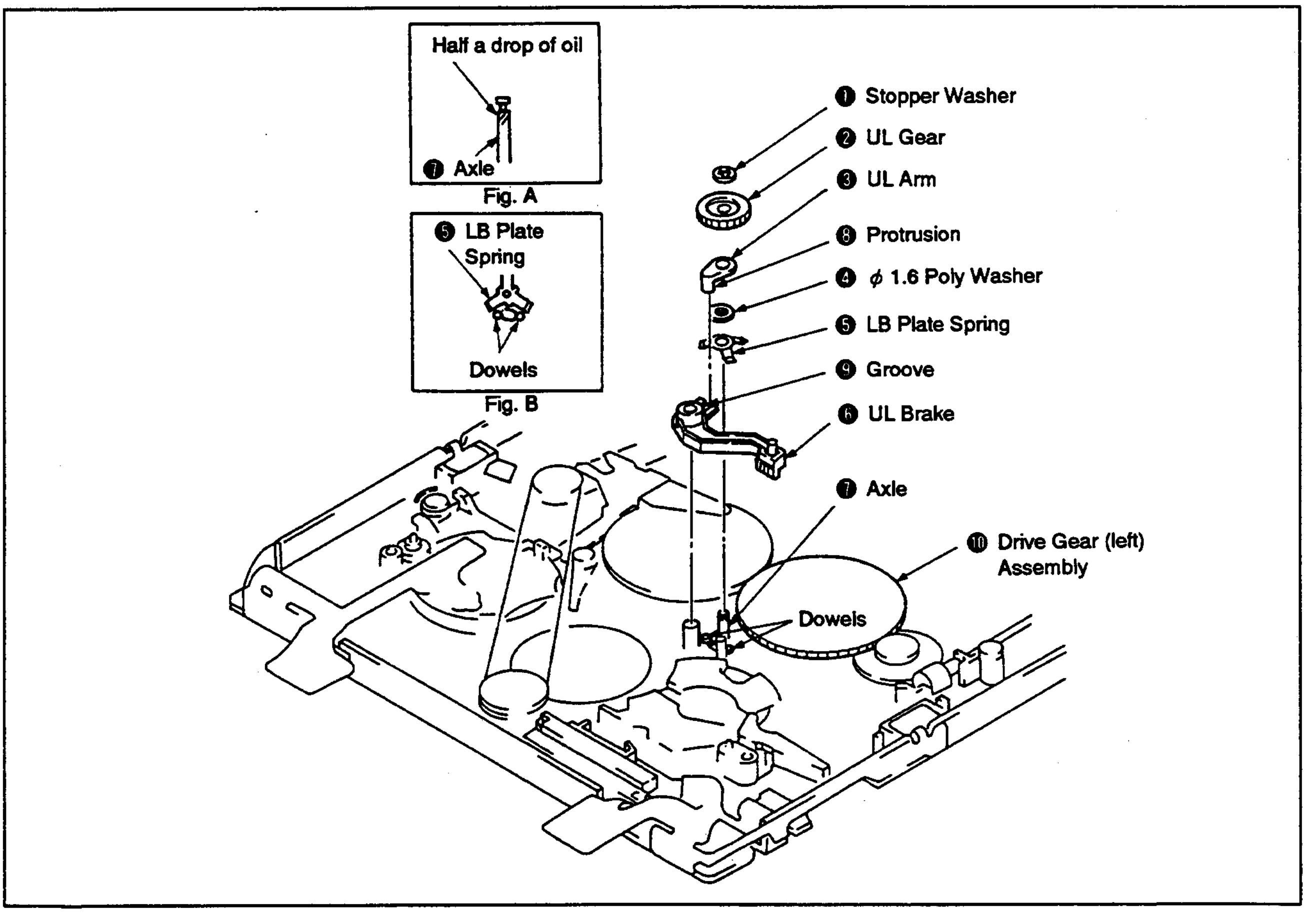

Half a drop of oil
❼ Axle
Fig. A
❺ LB Plate Spring
Dowels
Fig. B
❶ Stopper Washer
❷ UL Gear
❸ UL Arm
❽ Protrusion
❹ ϕ 1.6 Poly Washer
❺ LB Plate Spring
❾ Groove
❻ UL Brake
❼ Axle
❿ Drive Gear (left) Assembly
Dowels

Fig. 3-18.

3-18. COASTER (RIGHT) ASSEMBLY, DRIVE GEAR (RIGHT) ASSEMBLY

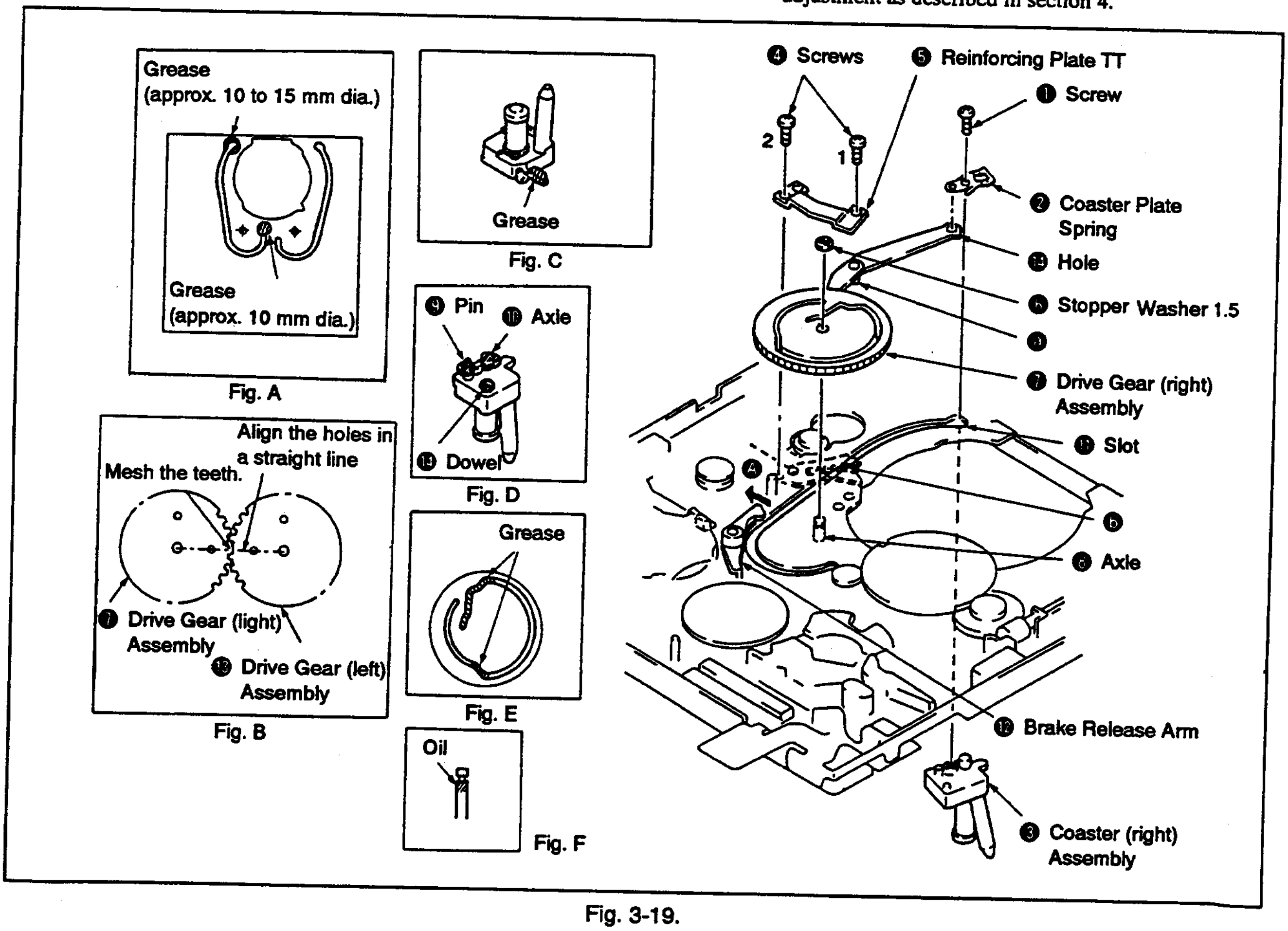
1. Removal (See Fig. 3-19.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the drum unit as described in section 3-13.
3) Remove the switch lever assembly as described in section 3-14.
4) Remove the timing belt (L) , the RC gear assembly and the loading lever assembly as described in section 3-15.
5) Set the STOP mode.
6) Remove the screw ❶ , then remove the coaster plate spring ❷ and the coaster (right) assembly ❸ .
7) Remove the two screws ❹ , then remove the reinforcing plate TT ❺ .
8) Remove the stopper washer 1.5 ❻ , then remove the drive gear (right) assembly ❼ .

2. Installation (See Fig. 3-19.)

1) Grease the points of the mechanism chassis shown in Fig A.
2) Apply half a drop of oil to the axle ❽ (See Fig. F).
3) Grease pin ❾ , axle ❿ and dowel ⓯ of the coaster (right) assembly ❸ (See Fig. D).
4) Mount by aligning the pin ❾ and the axle ❿ with the slot ⓫ of the mechanism chassis.
5) Move the brake release arm ⓬ in the direction of the arrow 🅐 to put it out of the way.
6) Mount the drive gear (right) assembly ❼ to the axle ❽ , and engage it with the drive gear (left) assembly ⓭ as shown in Fig. B.
7) Align the ⓐ part with the ⓑ part, and the hole ⓮ with the pin ❾ of the coaster (right) assembly ❸ .
8) Install the stopper washer 1.5 ❻ .
9) Mount by aligning the coaster plate spring ❷ with the axle ❿ of the coaster (right) assembly ❸ and pin ❾ , then secure with the screw ❶ .
10) Mount the reinforcing plate TT ❺ aligning it with the dowel ⓯ , then tighten the two screws ❹ in the indicated order.
11) Grease the points indicated in Figs. C and E.
12) Mount the timing belt (L) , the RC gear assembly and the loading lever assembly as described in section 3-15.
13) Mount the switch lever assembly as described in section 3-14.
14) Mount the drum unit as described in section 3-13.
15) Mount the DC motor (capstan motor) as described in section 3-3.

Note:
- Screw ❶ should be tightened with a tightening torque of approx. 500g•cm. If tightened too much, the coaster (right) assembly ❸ and the coaster plate spring ❷ will be deformed.
- After installing, be sure to perform tape path adjustment as described in section 4.



Grease
(approx. 10 to 15 mm dia.)
Grease
(approx. 10 mm dia.)
Fig. A
Align the holes in a straight line
Mesh the teeth.
❼ Drive Gear (light) Assembly
⓭ Drive Gear (left) Assembly
Fig. B
Grease
Fig. C
❾ Pin
❿ Axle
⓯ Dowel
Fig. D
Grease
Fig. E
Oil
Fig. F
❹ Screws
❺ Reinforcing Plate TT
❶ Screw
2
1
❷ Coaster Plate Spring
⓮ Hole
❻ Stopper Washer 1.5
ⓐ
❼ Drive Gear (right) Assembly
⓫ Slot
ⓑ
❽ Axle
🅐
⓬ Brake Release Arm
❸ Coaster (right) Assembly

Fig. 3-19.

3-19. COASTER (LEFT) ASSEMBLY, DRIVE GEAR (LEFT) ASSEMBLY

1. Removal (See Fig. 3-20.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the drum assembly as described in section 3-13.
3) Remove the switch lever assembly and the pinch roller sub-arm assembly as described in section 3-14.
4) Remove the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
5) Remove the coaster (right) assembly and the drive gear (right)assembly as described in section 3-18.
6) Remove the screw ❶, then remove the coaster plate spring ❷ and the coaster (left) assembly ❸.
7) Remove the two screws ❹, then remove the reinforcing plate SS assembly ❺.
8) Remove the stopper washer 1.5 ❻, then remove the drive gear (left) assembly ❼.

2. Installation (See Fig. 3-20.)

1) Grease the points of the mechanism chassis shown in Fig A.
2) Apply half a drop of oil to the axle ❽ (See Fig. E).
3) Grease pin ❾, axle ❿ and dowel ⓰ of the coaster (left) assembly ❸ (See Fig. B).
4) Mount by aligning the pin ❾ and the axle ❿ with the slot ⓫ of the mechanism chassis.
5) Fit the drive gear (left) assembly ❼ to the axle ❽, and mount so that the gear engages with the wheel gear ⓭ and the UL gear ⓮.
6) Align the ⓐ part with the slot ⓫, and the hole ⓮ with the pin ❾ of the coaster (left) assembly ❸.
7) Install the stopper washer 1.5 ❻.
8) Mount by aligning the coaster plate spring ❷ with the axle ❿ and pin ❾ of the coaster (left) assembly ❸, then secure with the screw ❶.
9) Mount the reinforcing plate SS assembly ❺ aligning it with the dowel ⓯, then tighten the two screws ❹ in the indicated order.
10) Grease points indicated in Figs. C and D.
11) Mount the coaster (right) assembly and the drive gear (right)assembly as described in section 3-18.
12) Mount the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
13) Mount the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
14) Mount the drum assembly as described in section 3-13.
15) Mount the DC motor (capstan motor) as described in section 3-3.

Note:
- Screw ❶ should be tightened with a tightening torque of approx. 500g•cm. If tightened too much, the coaster (right) assembly ❸ and the coaster plate spring ❷ will be deformed.
- After installing, be sure to perform tape path adjustment as described in section 4.

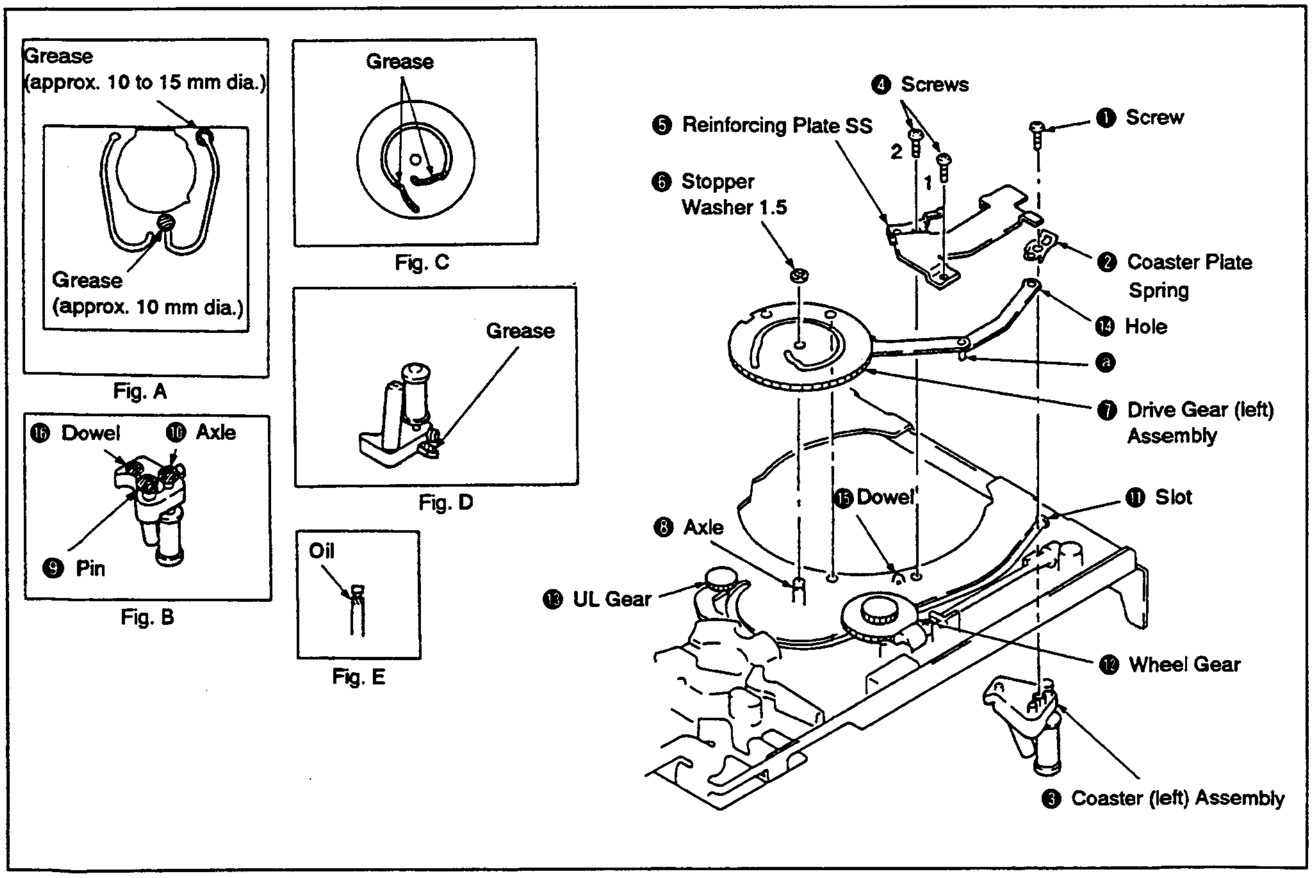

Grease
(approx. 10 to 15 mm dia.)
Grease
(approx. 10 mm dia.)
Fig. A
⓰ Dowel
❿ Axle
❾ Pin
Fig. B
Grease
Fig. C
Grease
Fig. D
Oil
Fig. E
❹ Screws
❺ Reinforcing Plate SS
2
1
❶ Screw
❻ Stopper Washer 1.5
❷ Coaster Plate Spring
⓮ Hole
ⓐ
❼ Drive Gear (left) Assembly
⓯ Dowel
⓫ Slot
❽ Axle
⓭ UL Gear
⓬ Wheel Gear
❸ Coaster (left) Assembly

Fig. 3-20.

3-20. LOADING MOTOR, BRAKE RELEASE ARM, WHEEL GEAR, WORM ASSEMBLY

1. Removal (See Fig. 3-21.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
3) Remove the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
4) Remove the drive gear (right) assembly as described in section 3-18.
5) Remove the drive gear (left) assembly as described in section 3-19.
6) Remove the two screws ❶, then remove the loading motor assembly ❷.
7) Remove the brake release arm ❸.
8) Remove the stopper washer ❹, then remove the wheel gear ❺.
9) Remove the worm assembly ❻ from the six claws ❼.

2. Installation (See Fig. 3-21.)

1) Mount the worm assembly ❻, matching it to the six claws ❼.
2) Grease the shaded parts of the worm assembly ❻ (five places) (see Fig A).
3) Apply half a drop of oil to the axle ❽ (See Fig. B).
4) Fit the wheel gear ❺ to the axle ❽ and engage it with the gear of the worm assembly ❻.
5) Mount the brake release arm ❸.
6) Grease the whole perimeter of the gear of the loading motor assembly ❷.
7) Align the loading motor assembly ❷ with the mechanism chassis and secure it with the two screws ❷.
8) Mount the drive gear (left) assembly as described in section 3-19.
9) Mount the drive gear (right) assembly as described in section 3-18.
10) Mount the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
11) Mount the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
12) Mount the DC motor (capstan motor) as described in section 3-3.

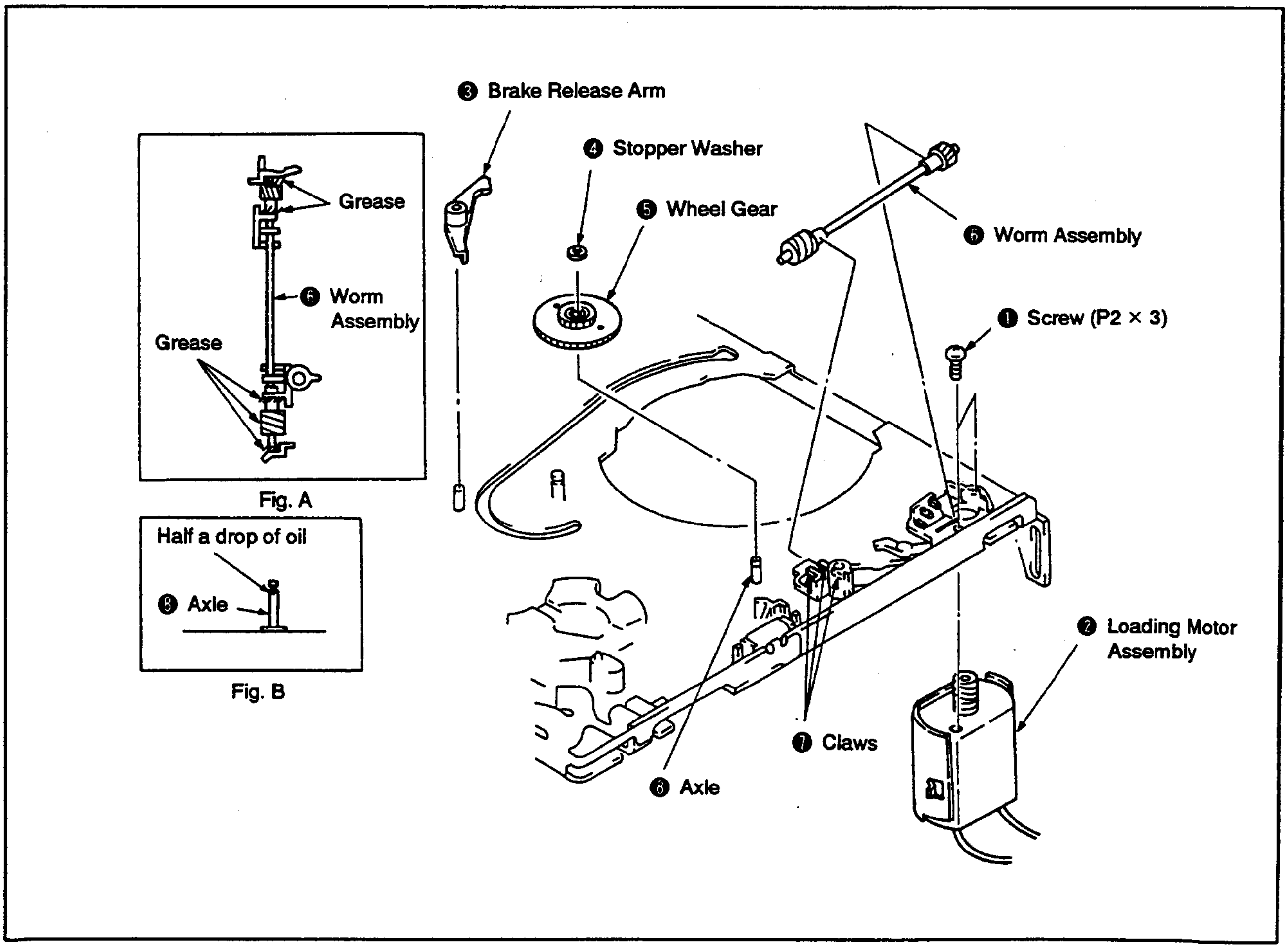

❸ Brake Release Arm
❹ Stopper Washer
❺ Wheel Gear
❻ Worm Assembly
❶ Screw (P2 × 3)
Grease
❻ Worm Assembly
Grease
Fig. A
Half a drop of oil
❽ Axle
Fig. B
❷ Loading Motor Assembly
❼ Claws
❽ Axle

Fig. 3-21.

3-21. ROTARY UPPER DRUM REPLACEMENT

1. Removal

- If possible, make a recording before removal.

1) Detach the six solderings ⓐ, then use a pair of tweezers or the like to confirm that the terminals passing through the board holes from below can move freely.
2) Remove the two screws ❶ (See Fig. 3-22).
3) Mount the jig ❹ (Ref. No. J-7) with the two supplied screws ❷, then screw the attached hexagon socket screws ❸ to the jig ❹. The rotary upper drum ❺ will move upward and come off (See Fig. 3-23).

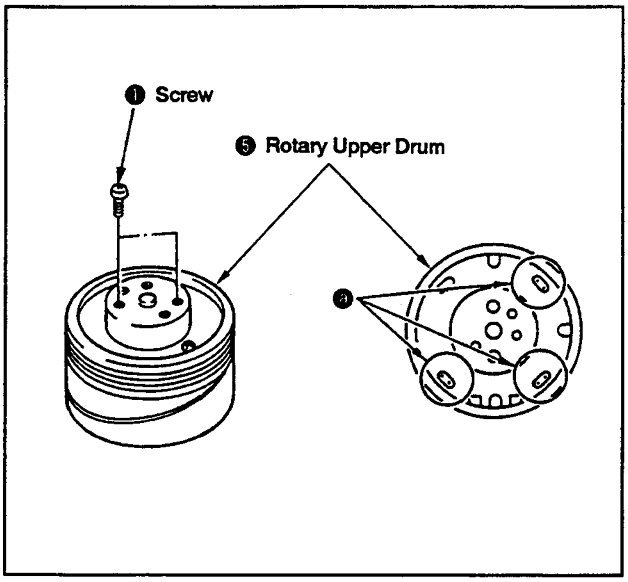


Fig. 3-22.

2. Installation

1) Wipe clean the flange surface and the rotary upper drum ❺ surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig ❼ (Ref. No. J-7) into the drum positioning hole, then set the rotary upper drum ❺ by passing the jig through its positioning hole ❻.
   Note: Confirm that the terminals ❽ protrude slightly from the rotary upper drum board holes (See Fig. 3-24).
3) Remove the jig ❼ and push down the rotary upper drum ❺ gently by hand. If it does not go all the way down, secure it temporarily by tightening the two hexagon socket screws ❶ alternately.
4) Insert the jig ❼ into the positioning hole ❻ again and confirm that it goes in smoothly. If it does not, loosen the two screws ❶, repeat step 3 of the Removal paragraph and restart the setting procedure.
5) Tighten the screws ❶.
6) Solder the terminals ❽ (ⓐ in Fig. 3-22).
   Note: Take care that no solder flows below the board.

Note: After installing, be sure to perform tape path adjustment as described in section 4.

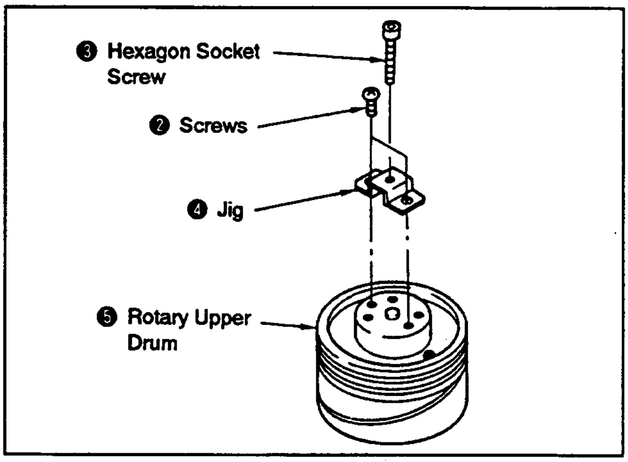


Fig. 3-23.

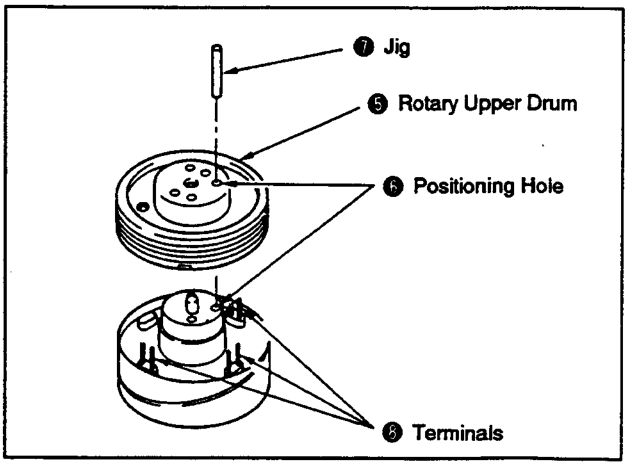


Fig. 3-24.

3-22. FWD BACK TENSION (See Fig. 3-25.)

1) Set the torque cassette (Ref. No. J-6).
2) Set the FWD mode and confirm that S reel table torque value is within 9 to 13 g•cm.
3) If the torque value does not meet the specification, adjust the adjust arm ❶.

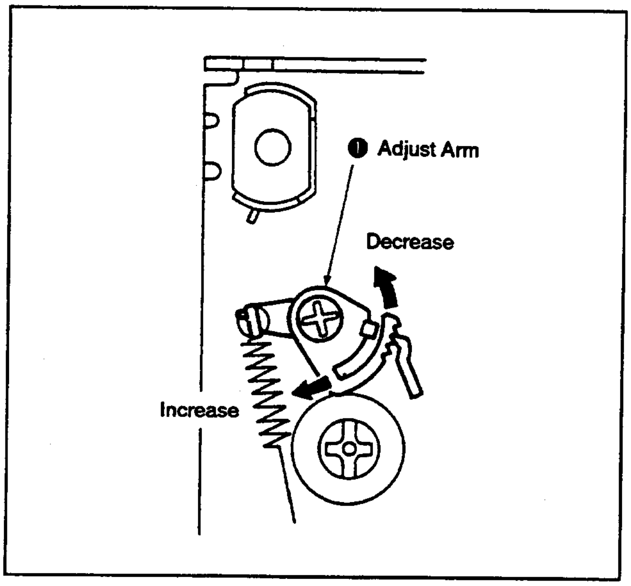


Fig. 3-25.

3-23. REEL TORQUE CHECK

1) Set the torque cassette.
2) Set the FWD mode and confirm that T reel table torque value is within 7 to 15 g•cm.
3) Set the REV mode and confirm that S reel table torque value is within 29 ± 6 g•cm.
4) Set the REV mode and confirm that T reel table torque value is within 13 to 25 g•cm.
5) If a torque value does not meet the specifications above, replace the corresponding reel table.

4. TAPE PATH ADJUSTMENT

[The Track Shift Mode]

In the 8 mm video system, instantaneous tape speed control is performed using four kinds of pilot signals, and high-precision tracking is achieved through the ATF (Automatic Track Finding) system. This makes a tracking control knob unnecessary and allows for precise tracing.

On the other hand, however, tape path adjustment presents some difficulties when the ATF system is used. Namely, since the ATF system will automatically compensate to some degree for head tracing errors, thorough adjustment is not possible.

This can be solved by setting the track shift mode for tracking fine adjustment. ATF will be compulsorily activated, shifting the tracking amount by a fixed amount (approx. 1/4) and thus making tracking fine adjustment easy. Furthermore, no track shift jigs are required.

4-1. TRACK SHIFT MODE SETTING

[Setting Procedure]

- Connect the TEST A and TEST B terminals to the COM terminal.
  Example:
  NTSC ········ GV-8
  PAL ·········· GV-8E
  Connect Pins ① and pin ③ of CN017 on the
  { SV-34 board (GV-8) / SV-35 board (GV-8E) } to pin ② of it. (See Fig. 4-1)

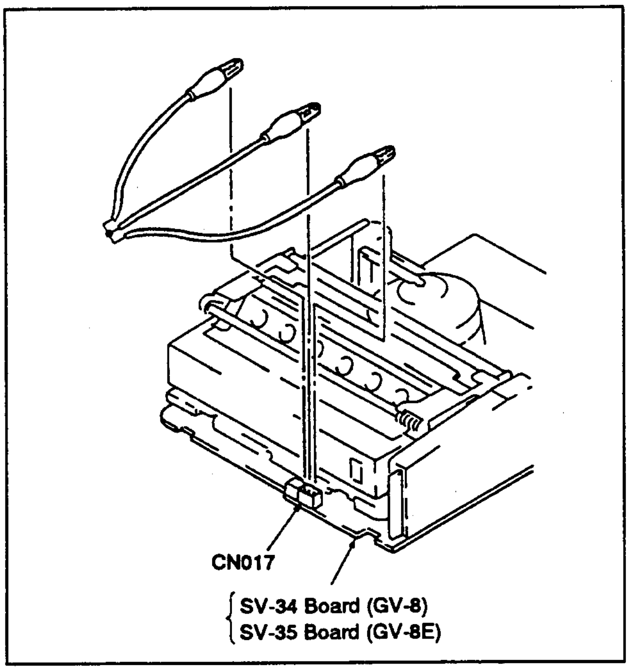
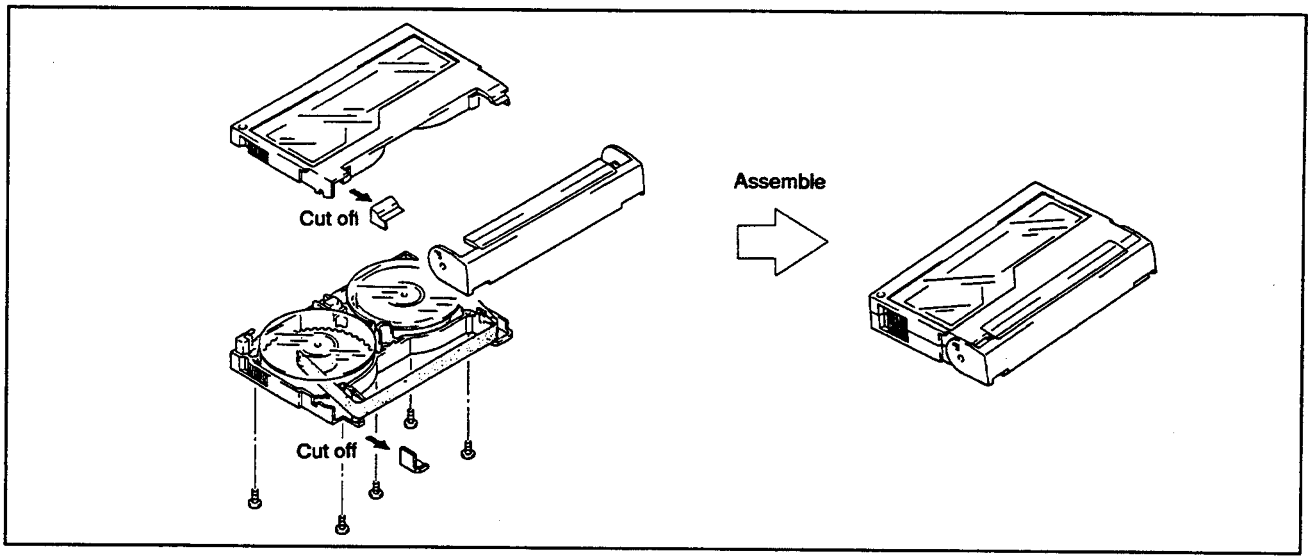


Fig. 4-1.

[Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig. 4-2).
Therefore, when performing section 4-6. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-5), modified as follows, and perform adjustment in playback mode.


Cut off
Assemble
Cut off

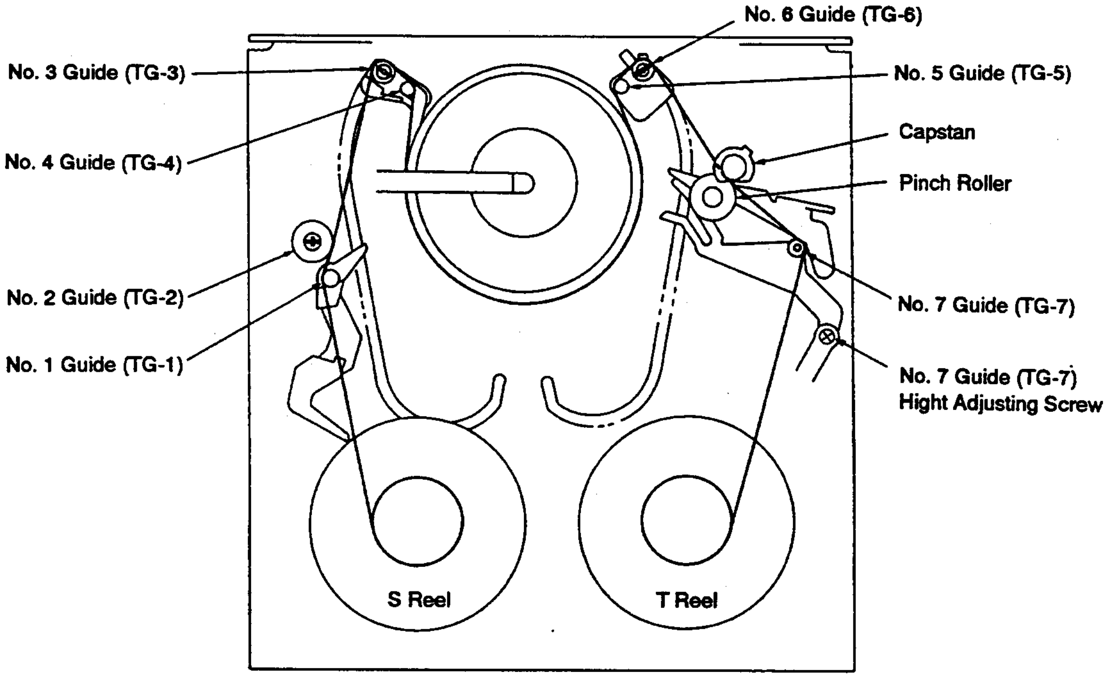

No. 6 Guide (TG-6)
No. 3 Guide (TG-3)
No. 5 Guide (TG-5)
Capstan
No. 4 Guide (TG-4)
Pinch Roller
No. 2 Guide (TG-2)
No. 7 Guide (TG-7)
No. 1 Guide (TG-1)
No. 7 Guide (TG-7)
Hight Adjusting Screw
S Reel
T Reel

Fig. 4-2.

4-2. PREPARATIONS FOR ADJUSTMENT

1) Clean tape path surfaces (tape guides, drum, capstan shaft, pinch roller) (See Fig. 4-2).
2) Connection of oscilloscope and output method of waveform.
   CH 1: RF signal output of the drum head (V RF OUT)
   Method for signal output:
   Short-circuit the external trigger output (RF SW. P) and GND.

   Example:
   NTSC ····· GV-8
   PAL ······· GV-8E
   CH 1: Pin ③ (V RF OUT) of CN018 on the
   { SV-34 board (GV-8)
   { SV-35 board (GV-8E)
   Method for signal output:
   Short-circuit pin ① (GND) and pin ② (RF SW.P) of CN018 on the
   { SV-34 board (GV-8)
   { SV-35 board (GV-8E)
3) Play back the alignment tape for tracking adjustment (Ref. No. J-5).
4) Confirm that both the entrance and exit side RF waveforms of the oscilloscope are flat (See Fig. 4-4). If they are not, adjust as follows.

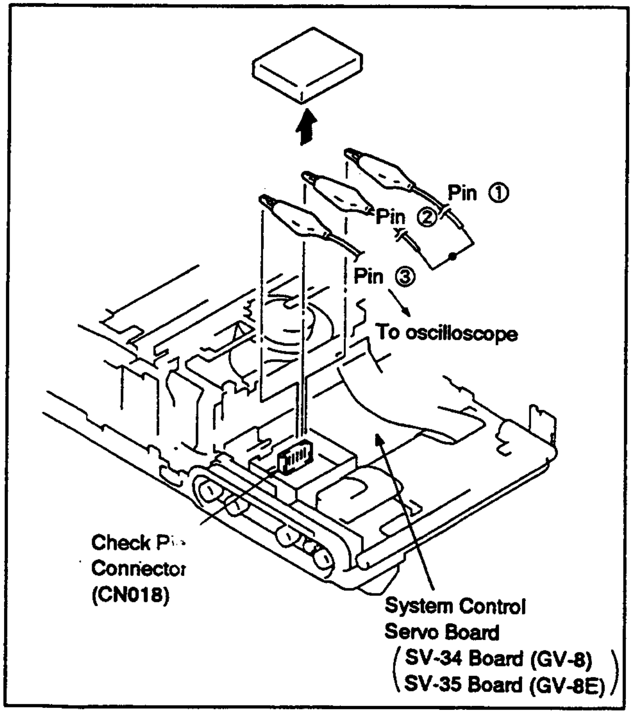

Pin ①
Pin ②
Pin ③
To oscilloscope
Check Pin Connector (CN018)
System Control Servo Board
(SV-34 Board (GV-8)
SV-35 Board (GV-8E))

Fig. 4-3.

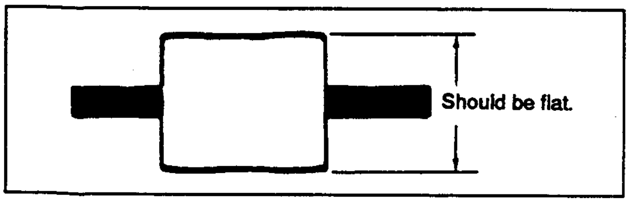

Should be flat.

Fig. 4-4.

4-3. TRACKING ADJUSTMENT (See Fig. 4-5.)

1) Play back the alignment tape for tracking adjustment.
2) Pass a hexagonal wrench, screwdriver (Ref. No. J-11) or the like through the hole ❶, loosen the lockscrew ❷ a little, then make the entrance side waveform flat by turning the No. 3 guide (TG-3) ❸.
3) Pass a hexagonal wrench, screwdriver or the like through the hole ❹, loosen the lockscrew ❺ a little, then make the exit side waveform flat by turning the No. 6 guide (TG-6) ❻.

Note: Take care not to loosen lockscrews too much, since guides come loose easily.

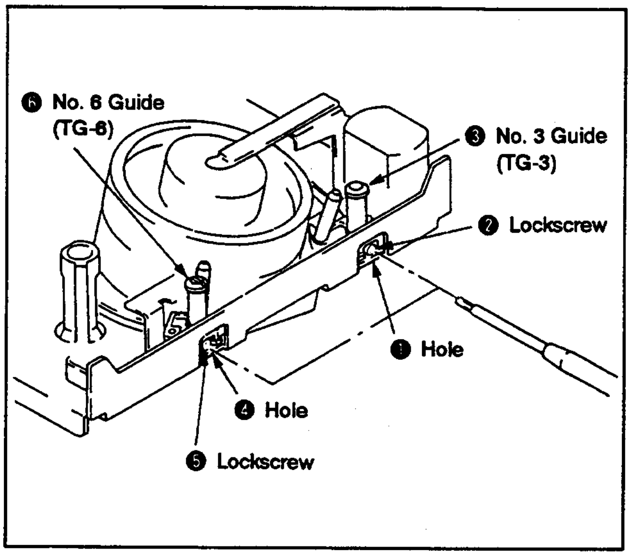

❻ No. 6 Guide (TG-6)
❸ No. 3 Guide (TG-3)
❷ Lockscrew
❶ Hole
❹ Hole
❺ Lockscrew

Fig. 4-5.

4-4. TRACKING FINE ADJUSTMENT (See Figs. 4-5. and 4-6.)

1) Play back the alignment tape for tracking adjustment and set the track shift mode.
2) Confirm whether the waveform is flat. If it is not, turn the No. 3 (TG-3) and No. 6 (TG-6) guides so that it becomes flat.
3) Fix the No. 3 guide ❸ by tightening its lockscrew ❷. Then confirm that the entrance side waveform has not changed.
4) Fix the No. 6 guide ❻ by tightening its lockscrew ❺. Then confirm that the exit side waveform has not changed.

Note: The set screws ❷ and ❺ should be tightened with a tightening torgue of approx. 200g•cm ± 10%.
If tightened too much, there is danger of damaging the thread.

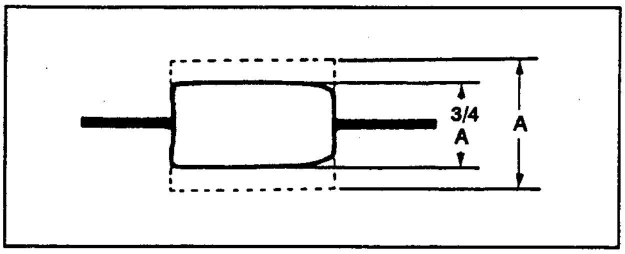


Fig. 4-6.

4-5. No. 2 GUIDE (TG-2) ADJUSTMENT

When the No. 2 guide has been turned or replaced, perform height presetting before this adjustment.

4-5-1. No. 2 Guide (TG-2) Height Presetting (See Fig. 4-7.)

1) Adjust the height from the mechanism chassis upper surface to the TG-2 upper flange ❶ upper surface to 18.6 mm by rotating the TG-2 upper flange ❶.

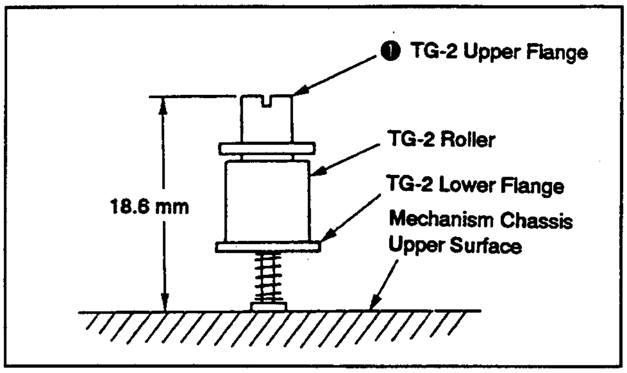


Fig. 4-7.

[Reference]
This U mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7). To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

Guide	Guide adjustment	Rotating direction of adjustment screw
TG-2, 3, 6	Raise	Counterclockwise
	Lower	Clockwise
TG-7	Raise	Counterclockwise
	Lower	Clockwise

4-5-2. No. 2 Guide (TG-2) Adjustment (See Figs. 4-8. and 4-9.)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange ❷ of the No. 2 guide (TG-2) ❶ (See Fig. 4-8). If it is, turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and tracking fine adjustment as described in sections 4-3. and 4-4.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (See Fig. 4-9), turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ 90° counter-clockwise and repeat step 5.
   Repeat steps 5 and 6 until a normal waveform is obtained. Then, confirm that the tracking waveform has not changed. If it has, perform fine adjustment of entrance side tracking and repeat step 5.

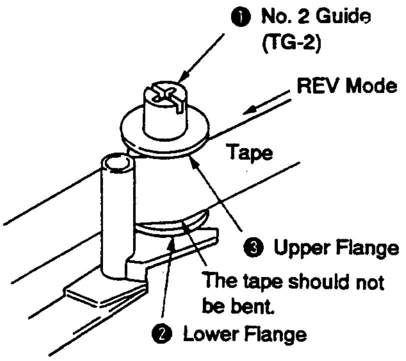

❶ No. 2 Guide (TG-2)
REV Mode
Tape
❸ Upper Flange
The tape should not be bent.
❷ Lower Flange

Fig. 4-8.

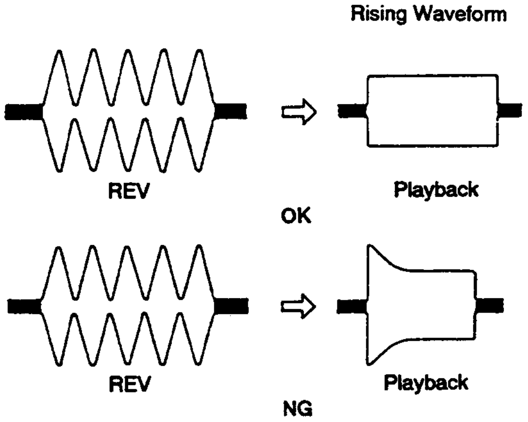

Rising Waveform
REV
Playback
OK
REV
Playback
NG

Fig. 4-9.

4-6. No. 7 GUIDE (TG-7) ADJUSTMENT (See Fig. 4-10.)

1) Play back the alignment tape for tracking adjustment and set the REV mode.
2) Confirm that the tape is not bent between the No. 6 guide (TG-6) ❶ and the capstan ❷ . If it is, turn the hight adjusting screw ❹ of the No. 7 guide (TG-7) ❸ until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan ❷ and the hight adjusting screw ❹ of the No. 7 guide (specification:0.5 mm or less) . If the tape is bent beyond the specification, turn the No. 7 guide (TG-7) ❸ until bending is within the specification (0.5 mm).
   If in the REV mode tape bending between the No. 6 guide (TG-6) ❶ and the capstan ❷ is 0.3 mm or less, adjustment can be considered completed.

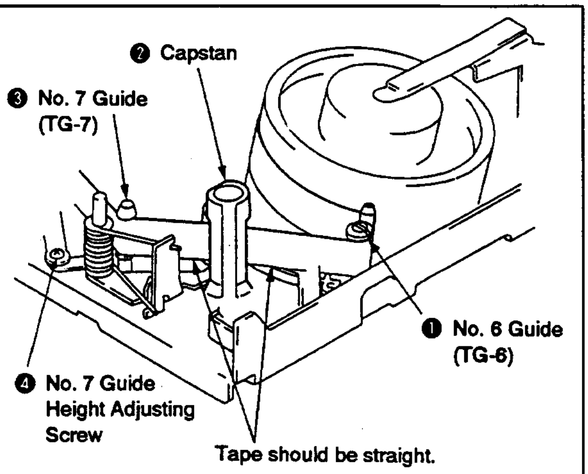

❷ Capstan
❸ No. 7 Guide (TG-7)
❶ No. 6 Guide (TG-6)
❹ No. 7 Guide Height Adjusting Screw
Tape should be straight.

Fig. 4-10.

4-7. CUE AND REV WAVEFORM CHECK (See Fig. 4-11.)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (See Fig. 4-11). In case pitch is not constant, perform section 4-4. Tracking Fine Adjustment and section 4-6. No. 7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (See Fig. 4-11). Otherwise, perform section 4-4. Tracking Fine Adjustment.

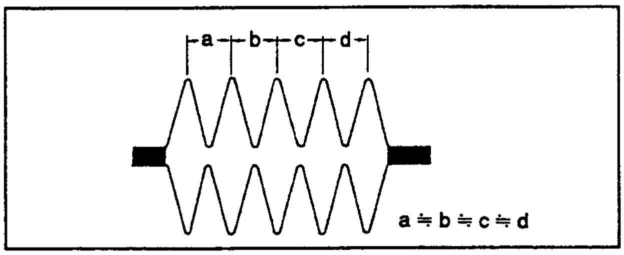


Fig. 4-11.

4-8. CHECK AFTER ADJUSTMENT

4-8-1. Tracking Check

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (See Fig. 4-12).
2) Then, confirm that the minimum amplitude value (EMIN) is 65% of the maximum value (EMAX) or larger (See Fig. 4-13).
3) Confirm that no large fluctuations occur on the waveform (See Fig. 4-14).

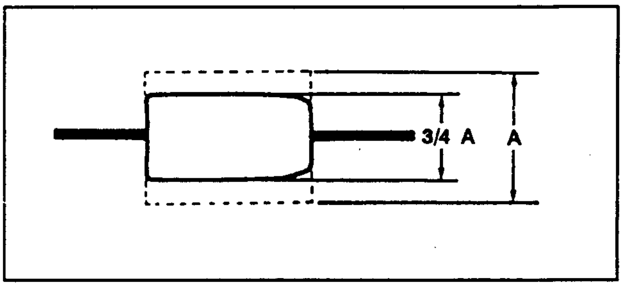


Fig. 4-12.

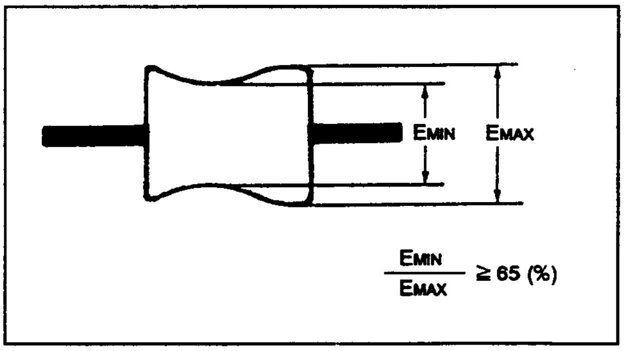


Fig. 4-13.

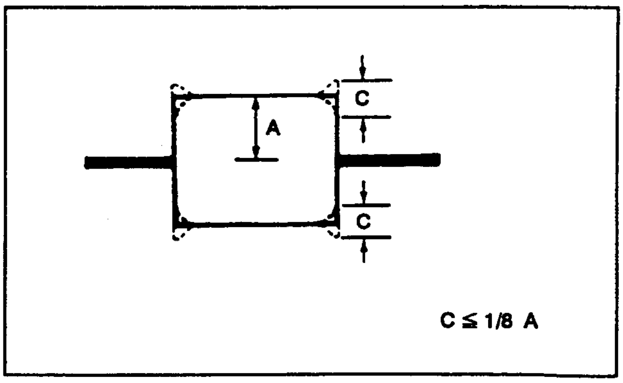


Fig. 4-14.

4-8-2. Rising Check (See Fig. 4-15.)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF waveform rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller (See Fig. 4-15).
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

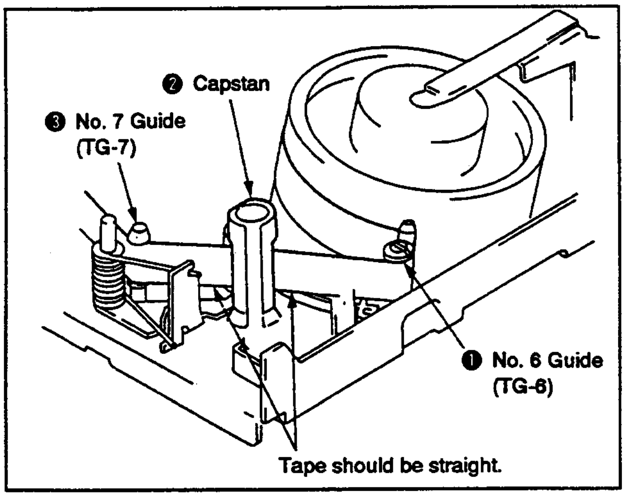

❷ Capstan
❸ No. 7 Guide
(TG-7)
❶ No. 6 Guide
(TG-6)
Tape should be straight.

Fig. 4-15.

4-8-3. Tape Path Check (See Fig. 4-16.)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3 mm, at the lower flange of the No. 2 guide, the upper flange of the No. 3 guide, the upper flange of the No. 6 guide and the No. 7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3 mm at the flanges of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

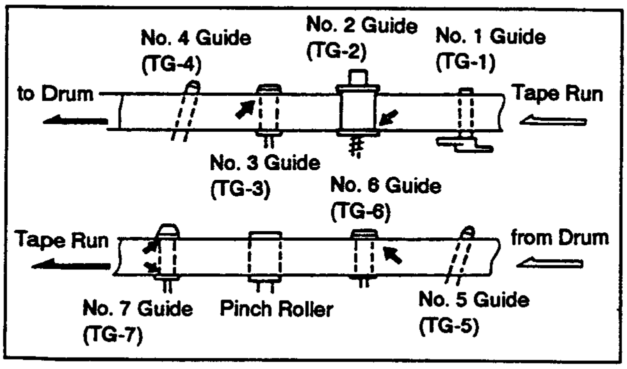

No. 4 Guide
(TG-4)
No. 2 Guide
(TG-2)
No. 1 Guide
(TG-1)
to Drum
Tape Run
No. 3 Guide
(TG-3)
No. 6 Guide
(TG-6)
Tape Run
from Drum
No. 7 Guide
(TG-7)
Pinch Roller
No. 5 Guide
(TG-5)

Fig. 4-16.